

An aerial photograph of a multi-lane highway, State Road 9, running vertically through the center of the image. The road is flanked by green grassy medians and shoulders. On both sides of the road, there are various commercial establishments, including restaurants like McDonald's, Burger King, and Wendy's, as well as retail stores like DANE and Days Inn. Large parking lots filled with cars are visible adjacent to these businesses. The overall scene depicts a typical suburban or commercial corridor.

State Road 9 Non-Motorized Safety Study

S.R. 9 NON-MOTORIZED SAFETY STUDY

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Study Background

State Road 9, known in Anderson as Scatterfield Road, is the major north/south thoroughfare regionally connecting the retail and entertainment center of Anderson with Interstate 69. The corridor has the largest non-interstate traffic volumes within the City of Anderson, approaching nearly 30,000 vehicles per day.

The corridor includes a mix of residential subdivisions and retail, service, and entertainment activity. Because the amount of activity diversity is so high, walking and biking trips are typically observed in increased capacity within these areas. This effect is commonly seen in downtown areas, but will be present regardless of the location of the historic core as long as large amounts of activity diversity are present in any given area.

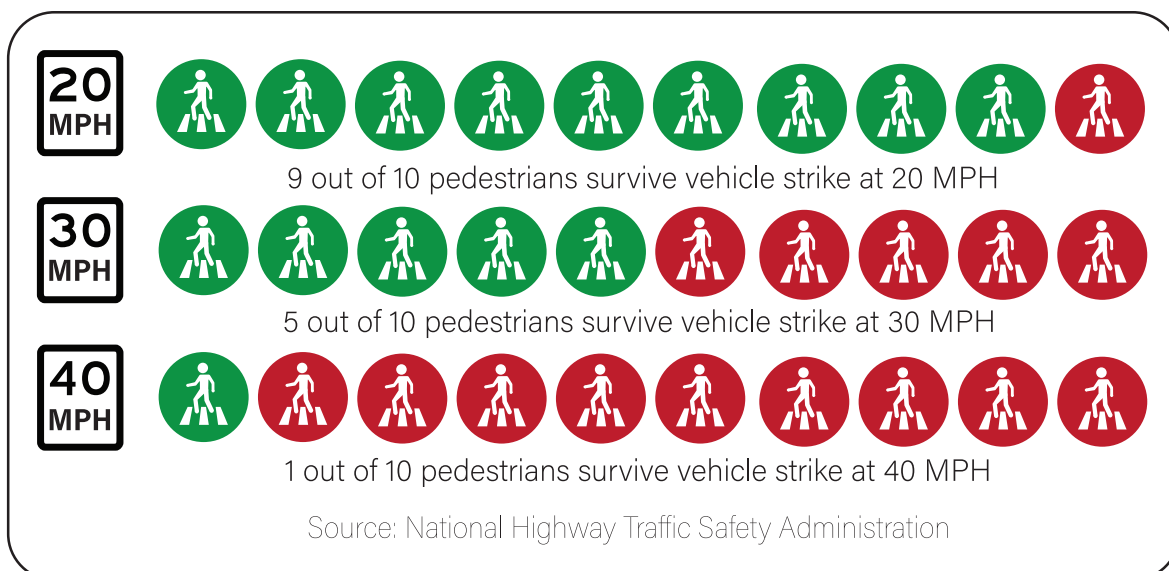
Because there is a high degree of activity diversity, this can present safety issues for non-motorized users of the transportation system when there is a lack of infrastructure that protects those users. Non-motorized users in this context are commonly referred to as vulnerable users of the transportation system because they are at increased risk of fatal injury, and serious injury collisions which can significantly impact quality of life post-vehicle collision. In the figure below, there are significant risks to pedestrians as speeds increase. A pedestrian involved in a crash where the vehicle is traveling at 20 MPH has a 90% probability of survivability, this survivability diminishes when vehicle speeds are 40 MPH, with a 10% probability of survivability. Because the SR 9 corridor has the potential for speeds exceeding 40 MPH, it is important that highly visible crosswalks are added to create awareness and legal protections for these users.

This study was requested to be conducted by the City of Anderson Engineering Department to begin prioritizing pedestrian needs along the corridor. The approach of this study is to use a data driven method to quickly identify the following at key locations:

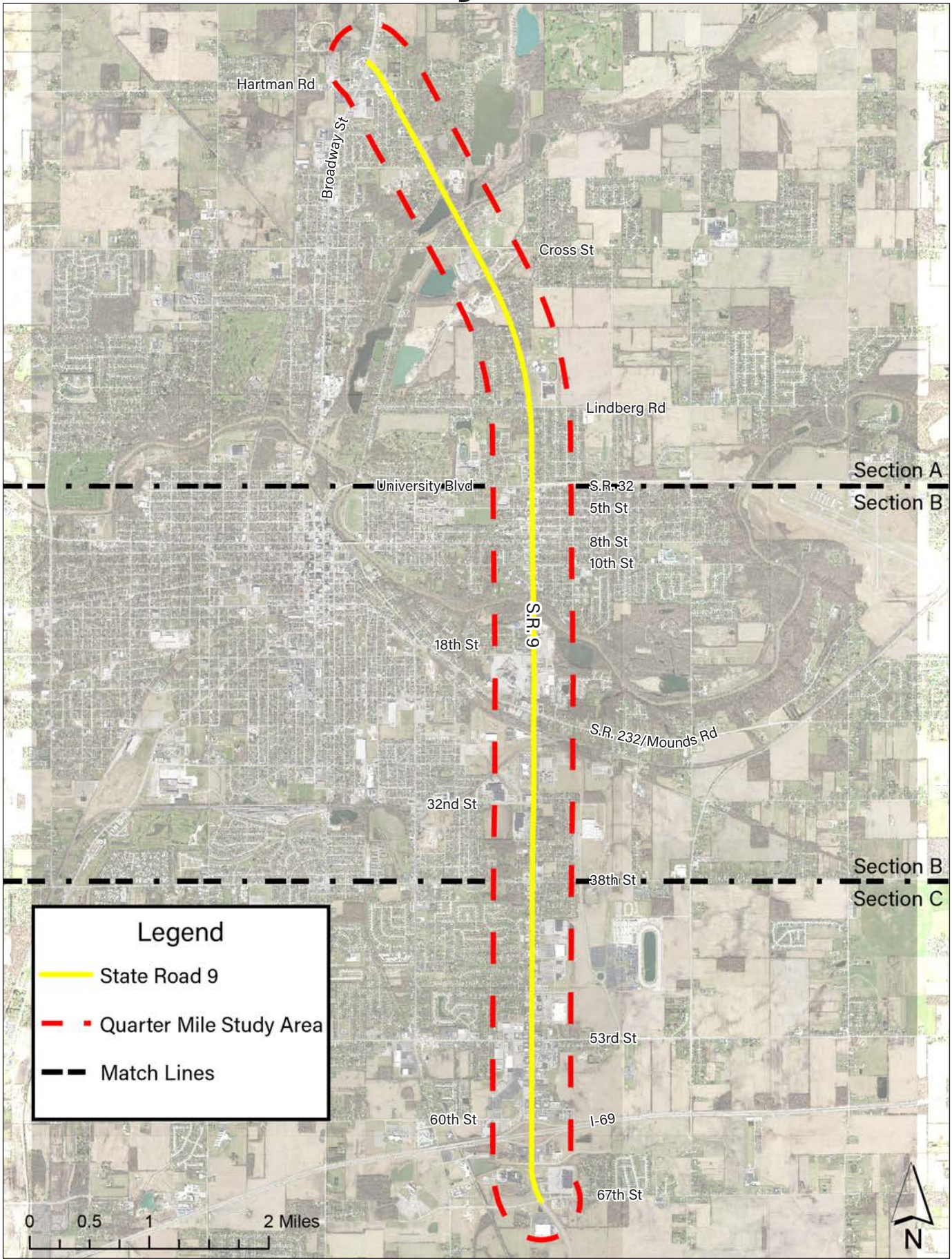
1. Intersection total entering volume (TEV)
2. Vehicle speed
3. Non-motorized crashes
4. Non-motorized crash severity
5. Amount of existing non-motorized infrastructure (i.e. sidewalk, trail, crosswalk)

The study will rank each location based on a weighted score for each intersection. Prioritizing intersections that have a high degree of fatal or injury collisions, within sections of the corridor that have the highest amount of non-motorized crashes. Each intersection has a recommended low-cost improvement that will increase the number of side paths at intersections, as well as add crosswalks at those intersections to provide highly visible and protected crossings to vulnerable users of the transportation system in these areas.

This study is being presented as a quick response plan for the City of Anderson, additional planning work is recommended in the form of a full-scale corridor plan which will cover how to retrofit the entire State Road 9 corridor outside of just intersections, including with how infrastructure will be provided within shopping and entertainment centers which currently lack any internal site circulation for vulnerable users.



Study Area



Sections

The study area, which includes the area within a quarter-mile (1/4-mile) surrounding the corridor, was broken into three sections—A, B, and C—based on similarity of adjacent land uses, speeds, traffic volumes, and existence of non-motorized amenities. Each section includes an overview of the location and severity of non-motorized-involved crashes overlaid with the existing sidewalk network.

From 2008 through 2017, the Anderson Metropolitan Planning Area (Anderson MPA), which includes all of Madison County and the Towns of Daleville and Fortville, averaged between 19 and 24 fatal or serious injury, non-motorized crashes per year. The S.R. 9 / S.R. 109 corridor in Anderson has had 6 fatal and 23 serious injury, non-motorized crashes between 2008 and 2018, or an average of 2.64 non-motorized injury crashes per year, attributing approximately 11.0% to 13.9% of the MPA-wide fatal or serious injury, non-motorized crashes. Although this is a rough comparison, it illustrates the concentration of non-motorized crashes on the corridor and the importance of addressing the significant safety issues.

Total Non-Motorized Crashes	
Signalized Intersections	26
Unsignalized Intersections	10
Mid-block	3

Section A

Section A spans from Broadway Avenue in north Anderson to S.R. 32 / University Boulevard leading into Anderson University. Adjacent land uses largely consist of residential. There is a concentration of sidewalks in the apartment complex southeast of the S.R. 9 and Cross Street intersection that is directly across from a Pay Less and other shopping attractions, but the area overall lacks sidewalk connectivity. Between 2008 and 2018, there have been 4 non-motorized crashes of varying severity. Reviewing the NPMRDS speed profiles (further discussed and illustrated in Appendix A) shows this section as the highest speed area of the corridor,

averaging around 40 MPH in both the northbound and southbound directions, with little variation across time periods. Finally, the overall traffic volumes and intersection total entering volumes (TEVs) are lower than the rest of the corridor, ranging from 10,000 to 20,000 vehicles per day (VPD).

Section B

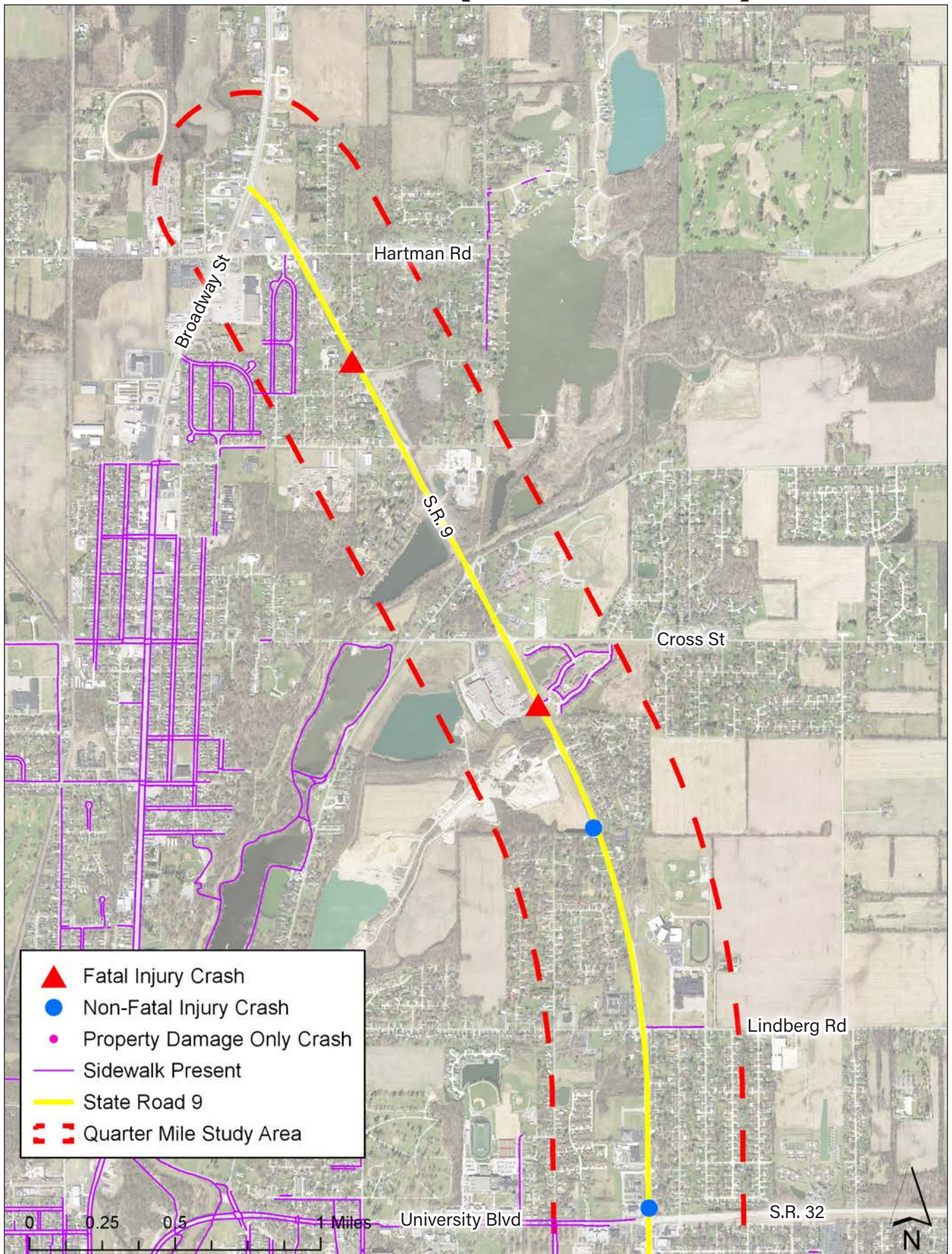
Section B spans from S.R. 32 / University Boulevard to 38th Street. There is a mix of land uses with commercial concentrated between the White River and S.R. 232 / Mounds Road near the Mounds Mall area. Although the corridor itself lacks significant sidewalk connectivity, multiple minor streets include sidewalks that feed directly onto the corridor. Between 2008 and 2018, there have been 28 non-motorized crashes of varying severity. Reviewing the NPMRDS speed profiles shows this section with moderate, but consistent speeds, averaging between 25 and 30 MPH in both the northbound and southbound directions. Finally, the overall traffic volumes and intersection TEVs range from 25,000 to 40,000 VPD.

Section C

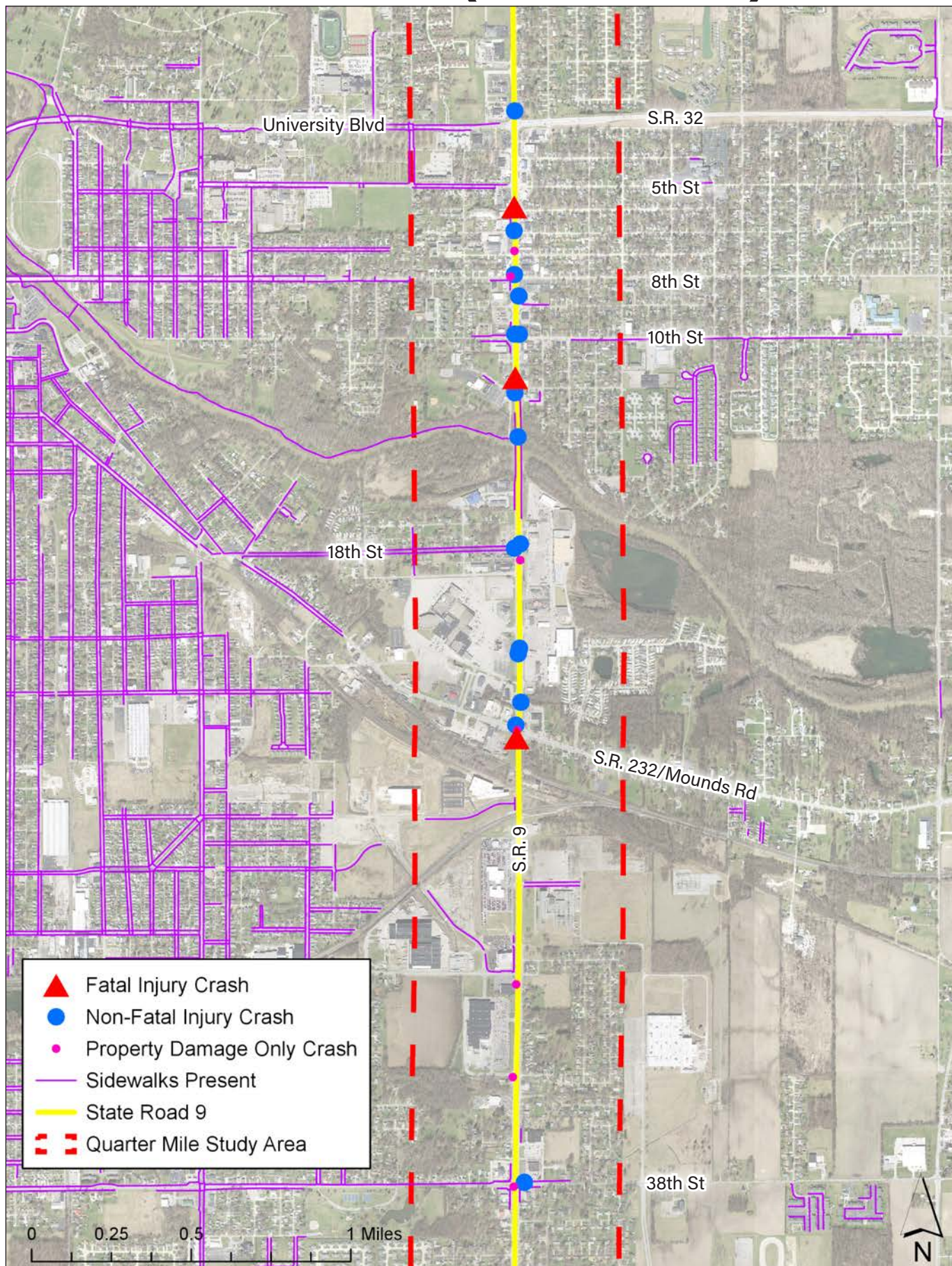
Section C spans from 38th Street to 67th Street just south of I-69 Exit 226. The Section does vary significantly in adjacent land use, traffic volumes, and speed north and south of I-69, but includes the highest concentration of commercial activity with S.R. 9 creating a significant boundary between residential neighborhoods and shopping / employment opportunities. There is very little sidewalk installed along the corridor and only a few minor streets with sidewalk connecting onto S.R. 9. Between 2008 and 2018, there have been 7 non-motorized crashes of varying severity. Reviewing the NPMRDS speed profiles shows this section with the lowest and least consistent speeds, averaging between 21 and 25 MPH daily in both the northbound and southbound directions, but dropping below 20 MPH at times. Finally, the overall traffic volumes and intersection TEVs range from 22,000 to 40,000 VPD.

	Fatal Injury Crashes	Non-Fatal Injury Crashes	Property Damage Only Crashes	Total Crashes
Section A	2	2	0	4
Section B	3	16	9	28
Section C	1	5	1	7
Total	6	23	10	39

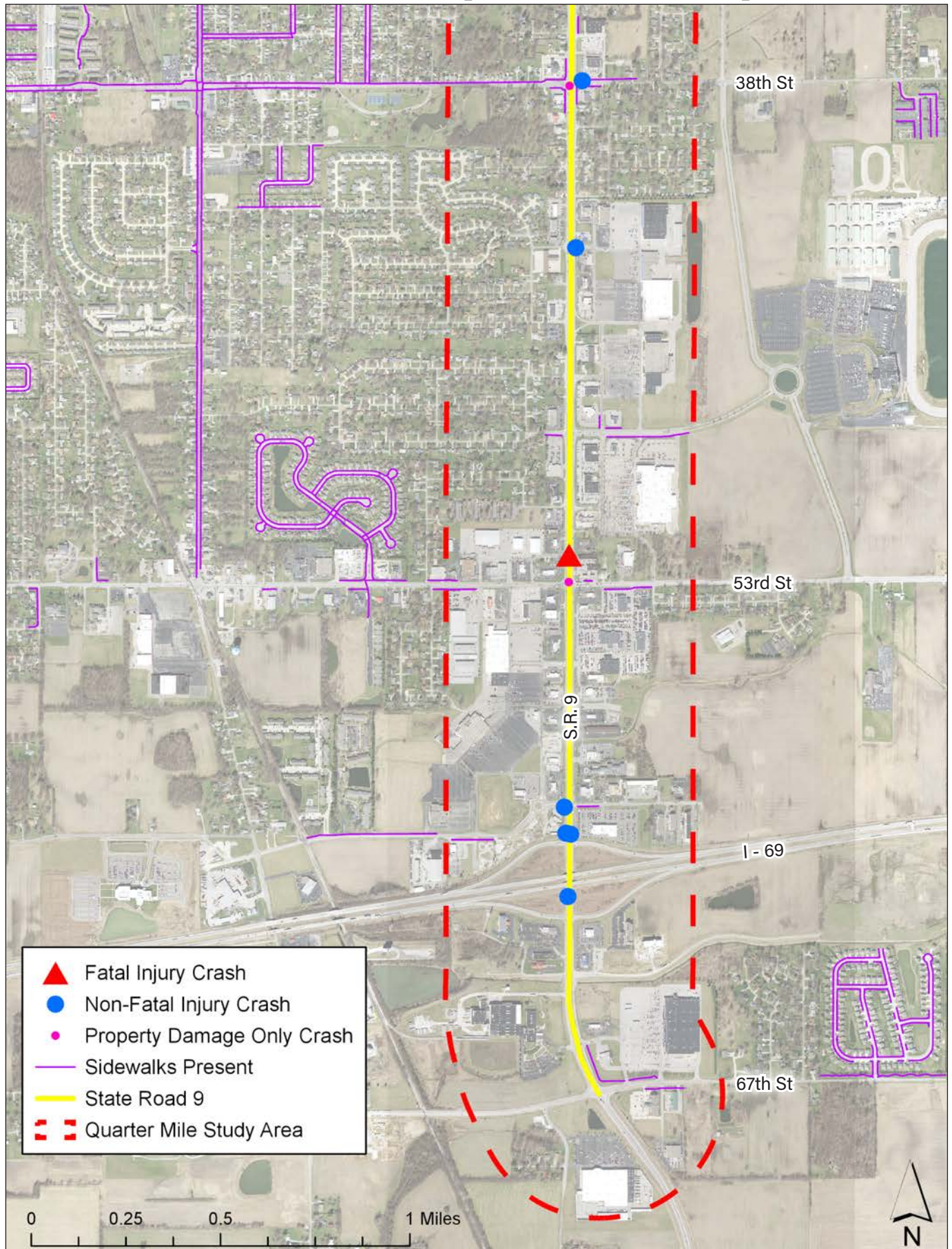
Section A (2008-2018)



Section B (2008-2018)



Section C (2008-2018)



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Intersections

In addition to reviewing the overall corridor and similar sections, the study concludes with an overview of the signalized intersections within the corridor. As the safest location for controlled non-motorized crossings, the proposed method for improving corridor-wide non-motorized safety is to focus early efforts on improving signalized intersections.

Each of the 21 signalized intersections was ranked first based on the number and type of non-motorized crashes at the intersection and within a walkable distance of the intersection (0.25-miles), with crashes at the intersection itself being weighted higher than crashes outside of the intersection. Further weighting including a review of the section crashes, intersection TEVs, and pedestrian crossing volumes. Only the bottom three (3) intersections needed to be

further split after crashes were considered, as no non-motorized crashes occurred in or near these locations. It should be noted, however, that the pedestrian crossing volumes are not necessarily an accurate portrayal of the overall number of pedestrians crossing throughout the year and may vary significantly based on weather conditions. Intersection studies included only 24-hours of data and were performed in March 2019, a time when less pedestrian traffic is to be expected due to low temperatures and rain.

Following the priority list is an overview of each individual intersection with the proposed design changes, such as sidewalk, crosswalk, and pedestrian refuge island installation. The amount of feet for proposed sidewalk and crosswalk corresponds with what is shown on the intersection specific maps.

At Intersection Crash Severity (60%)	Score
Fatal Injury	10
Non-Fatal Injury	7
Property Damage Only	2
Walkable Distance Crash Severity (40%)	Score
Fatal Injury	10
Non-Fatal Injury	7
Property Damage Only	2
Crash Location	Score
Section A	1
Section B	3
Section C	2

Intersection Priority List

Rank	Minor Street	Total Daily Entering Volume	Pedestrians Crossing S.R. 9*	Northbound Daily Average Speed (mph)	Southbound Daily Average Speed (mph)	Section Crash Weight	
1	8th Street	30,361	4	29	29	3	
2	10th Street	30,437	5	29	29	3	
3	S.R. 232/ Mounds Road	29,907	1	27	26	3	
4	Mounds Mall Plaza	26,062	6	29	29	3	
5	18th Street	31,326	1	29	29	3	
6	I-69 Southbound Ramps	25,582	2	21	24	2	
7	53rd Street	39,545	4	21	25	2	
8	I-69 Northbound Ramps	22,314	3	21	24	2	
9	59th Street	27,983	7	21	25	1	
10	38th Street	38,448	6	24	25	3	
11	S.R. 32/ University Blvd	29,275	0	32	28	1	
12	43rd Street	31,599	9	24	25	2	
13	32nd Street	26,255	3	30	29	3	
14	Charles Street	29,701	1	24	25	2	
15	Cross Street	18,661	0	37	37	1	
16	56th Street	25,715	43	21	25	2	
17	International Way	25,392	4	30	29	3	
18	67th Street	15,924	0	37	37	2	
19	Lindberg Road	20,277	1	42	41	1	
20	Broadway Street	15,687	0	42	40	1	
21	Hartman Road	10,581	0	42	40	1	

* Pedestrian counts are only available from 24-hour camera studies during the month of March with variable weather conditions that do not reflect a true daily average.

	Intersection				Walkable Distance of Intersection (0.25-mi)			
	Fatal Injury	Non-Fatal Injury	Property Damage Only	Total	Fatal Injury	Non-Fatal Injury	Property Damage Only	Total
	0	3	3	6	2	7	4	13
	0	2	0	2	1	7	3	11
	1	1	1	3	1	4	1	6
	0	2	0	2	0	6	2	8
	0	2	1	3	0	3	1	4
	0	2	0	2	0	4	0	4
	1	0	1	2	1	0	1	2
	0	1	0	1	0	4	0	4
	0	1	0	1	0	4	0	4
	0	1	1	2	0	1	1	2
	0	1	0	1	1	1	0	2
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	0	0	1	1	0	0	2	2
	0	0	0	0	1	0	0	1
	0	0	0	0	1	0	0	1
	0	0	0	0	0	1	0	1
	0	0	0	0	0	0	1	1
	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0

1 - 8th Street

8th Street connects neighborhoods to the east of S.R. 9 to Anderson University and downtown Anderson to the west of S.R. 9. Six (6) non-motorized crashes occurred between 2008 and 2018. Three (3) were non-fatal injury crashes and three (3) were property damage only crashes. There were four (4) pedestrians/pedalcyclists that crossed S.R. 9 at 8th Street on Thursday March 7, 2019. On this day it was 24 degrees and clear. There is some sidewalk present to the southwest of the intersection.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		30,361
Vehicles per Hour (veh/hr)		1,265
Pedestrians Crossing S.R. 9		4
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	2
Non-Fatal Injury	3	7
Property Damage Only	3	4
Total	6	13
Pedestrian Amenities		
Sidewalk Present (ft)		655
Sidewalk Proposed (ft)		1,315
Crosswalk Proposed (ft)		0
Crosswalk Proposed (ft)		363

Recommended Crosswalk Markings

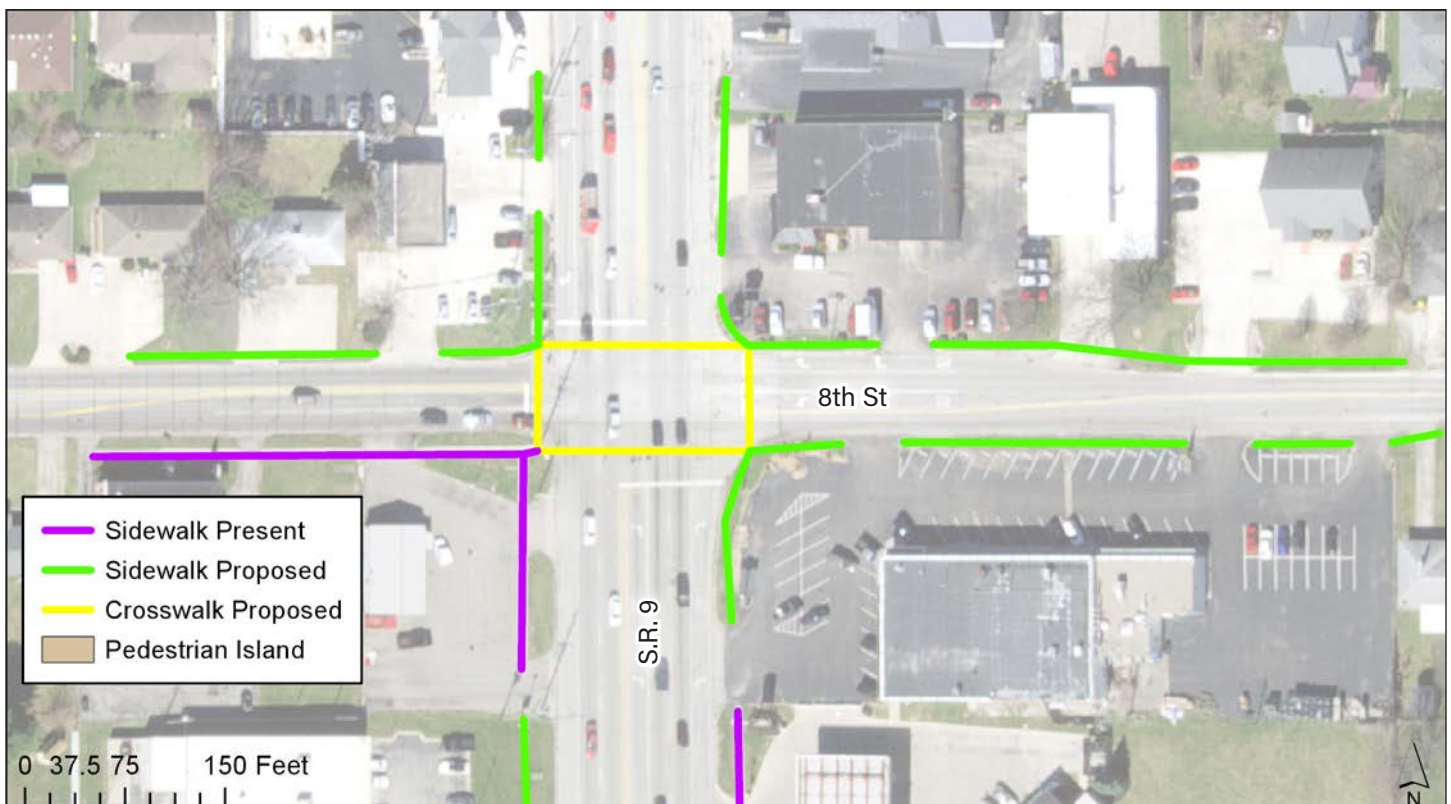
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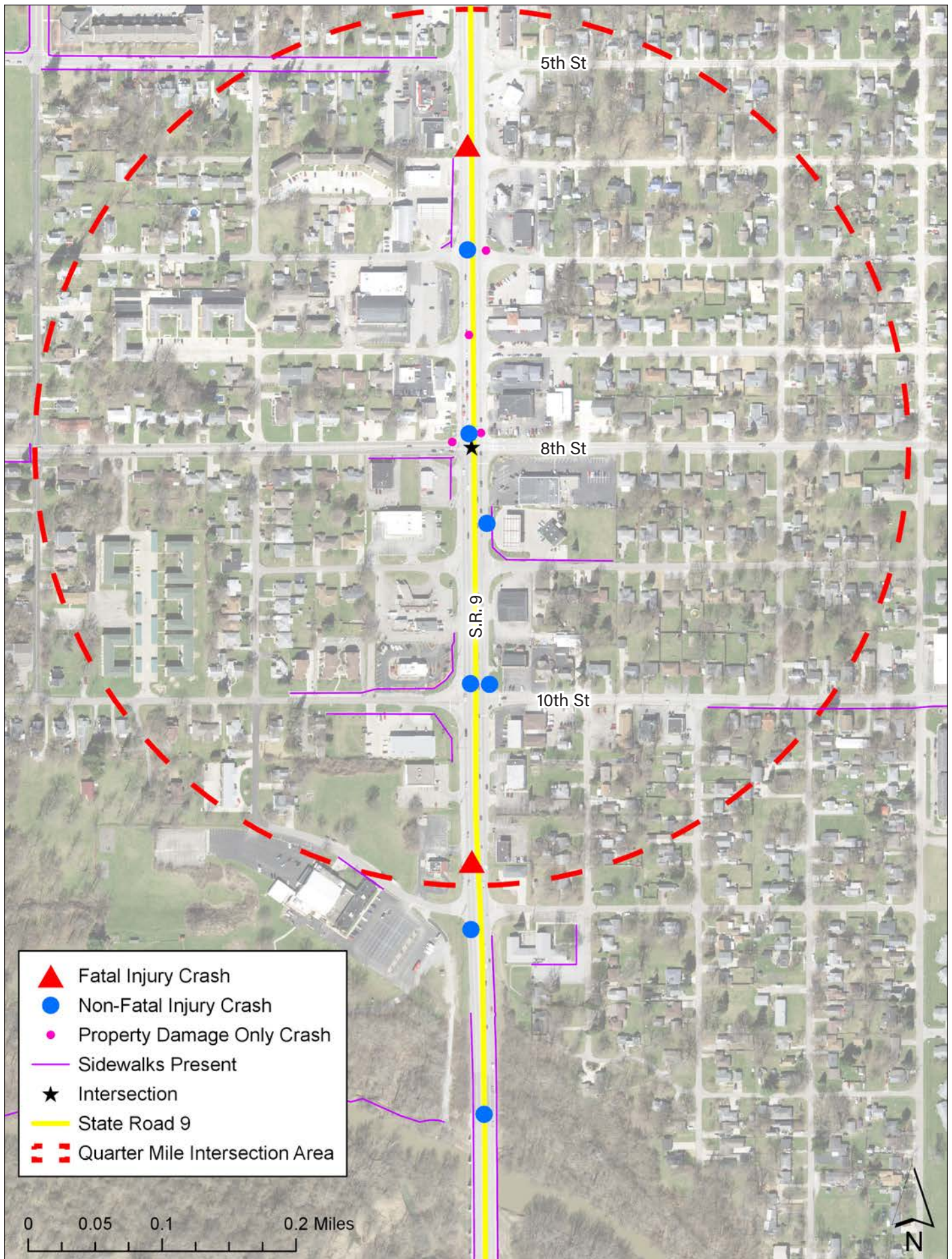


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2 - 10th Street

Two (4) non-motorized crashes occurred between 2008 and 2018. Both were non-fatal injury crashes just north of the intersection. There were five (5) pedestrians/pedalcyclists that crossed S.R. 9 at 10th Street on Thursday March 7, 2019. On this day it was 24 degrees and clear. There is some sidewalk present to the west of the intersection.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		30,437
Vehicles per Hour (veh/hr)		1,268
Pedestrians Crossing S.R. 9		5
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	1
Non-Fatal Injury	2	7
Property Damage Only	0	3
Total	2	11
Pedestrian Amenities		
Sidewalk Present (ft)		1,314
Sidewalk Proposed (ft)		1,035
Crosswalk Present (ft)		0
Crosswalk Proposed (ft)		403

Recommended Crosswalk Markings

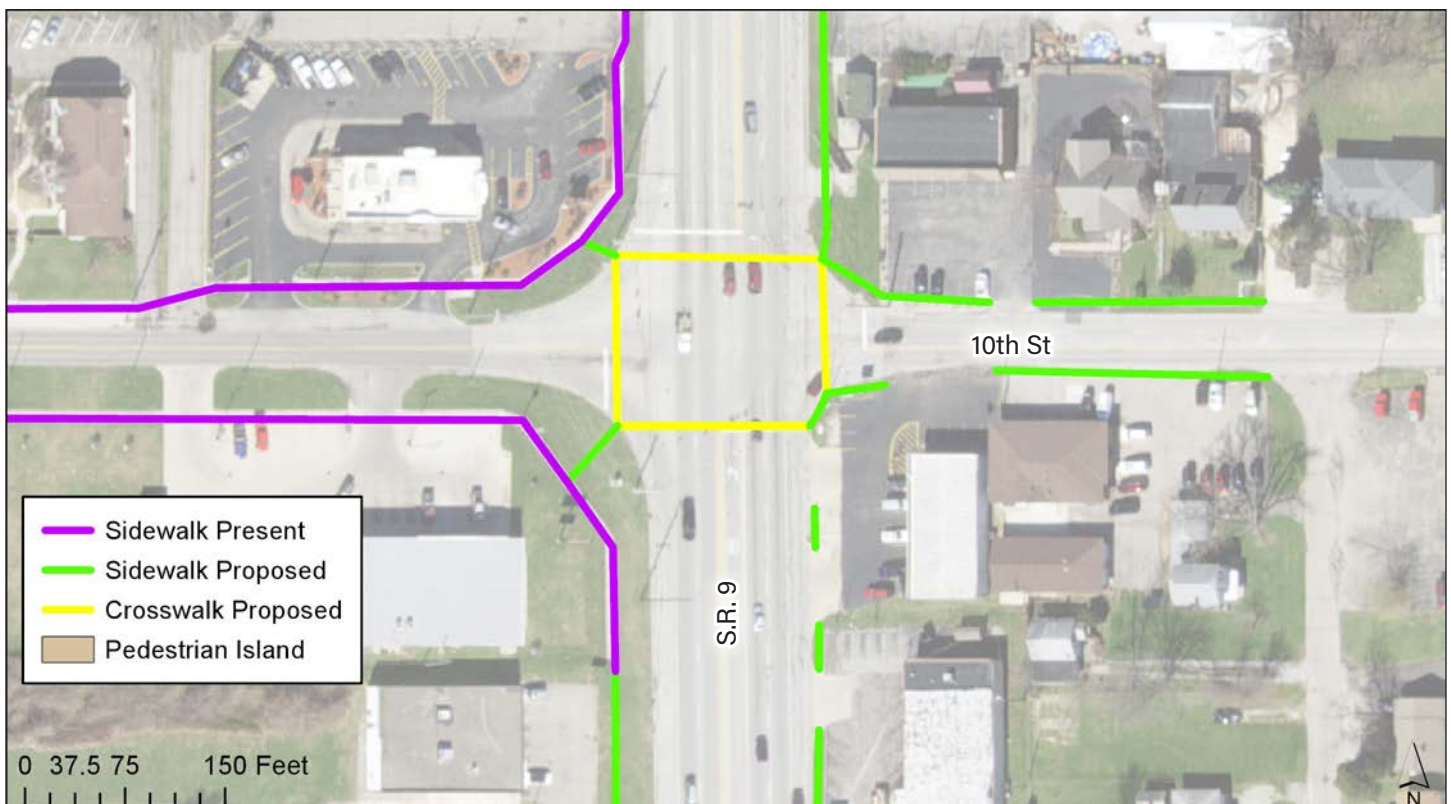
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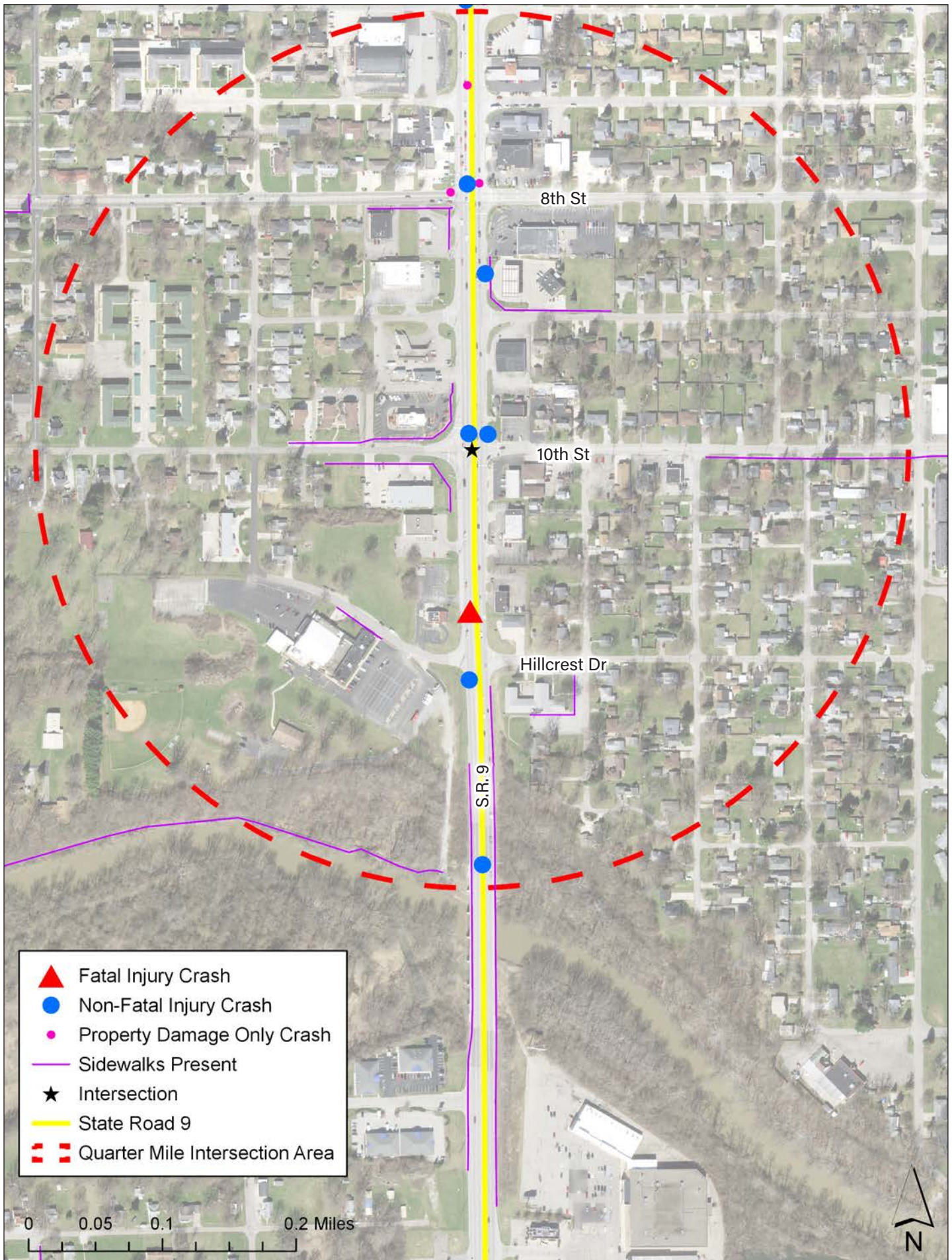


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3 - S.R. 232 / Mounds Road

Three (3) non-motorized crashes occurred between 2008 and 2018. One (1) fatal injury crash was just southwest of the intersection, one (1) non-fatal injury crash was just northwest of the intersection, and one (1) property damage only crash was in the intersection. There was one (1) pedestrian/pedalcyclist that crossed S.R. 9 at S.R. 32/Mounds Road on Tuesday March 19, 2019. On this day it was 31 degrees and clear.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume	29,907	
Vehicles per Hour (veh/hr)	1,246	
Pedestrians Crossing S.R. 9	1	
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	1	1
Non-Fatal Injury	1	4
Property Damage Only	1	1
Total	3	6
Pedestrian Amenities		
Sidewalk Present (ft)	0	
Sidewalk Proposed (ft)	2,402	
Crosswalk Proposed (ft)	0	
Crosswalk Proposed (ft)	364	

Recommended Crosswalk Markings

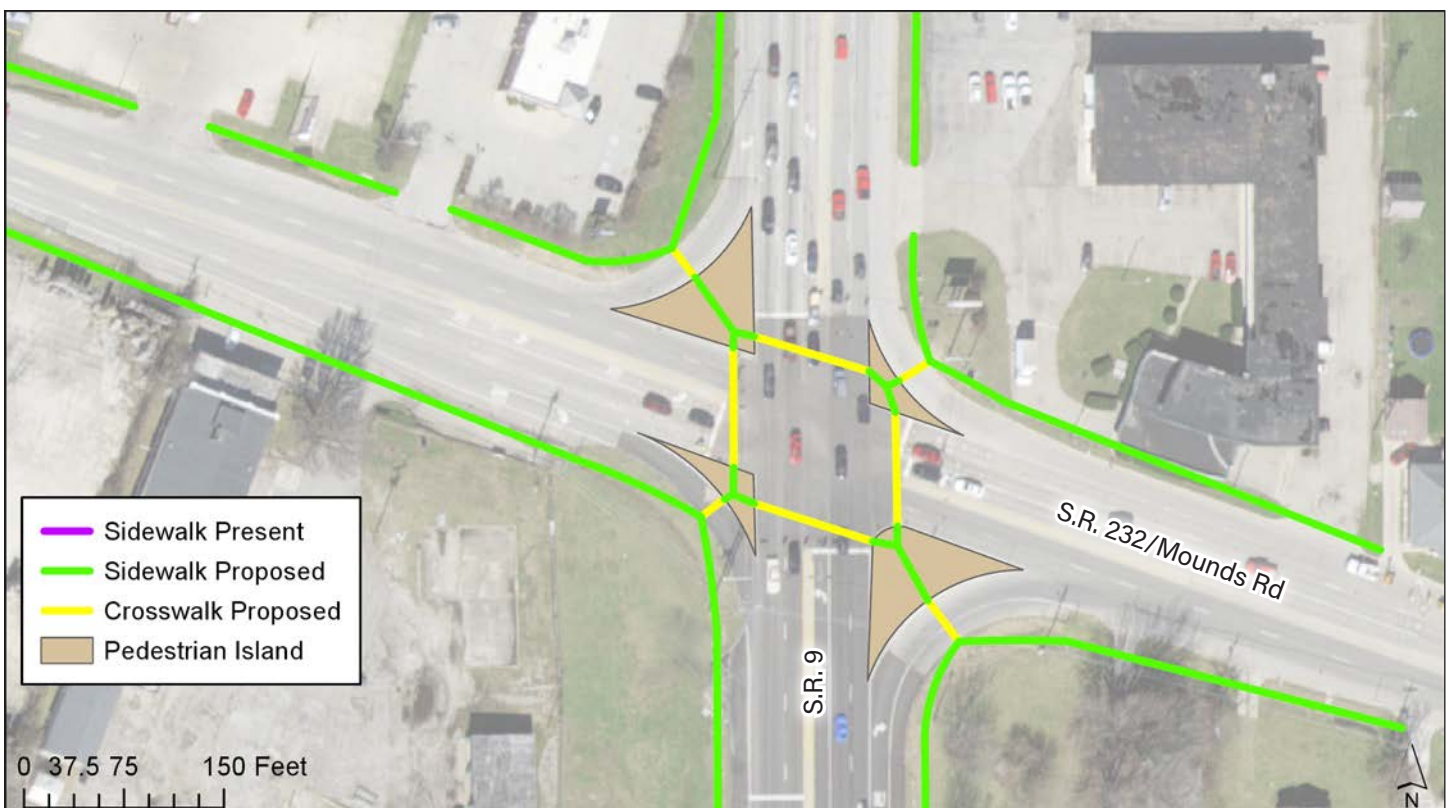
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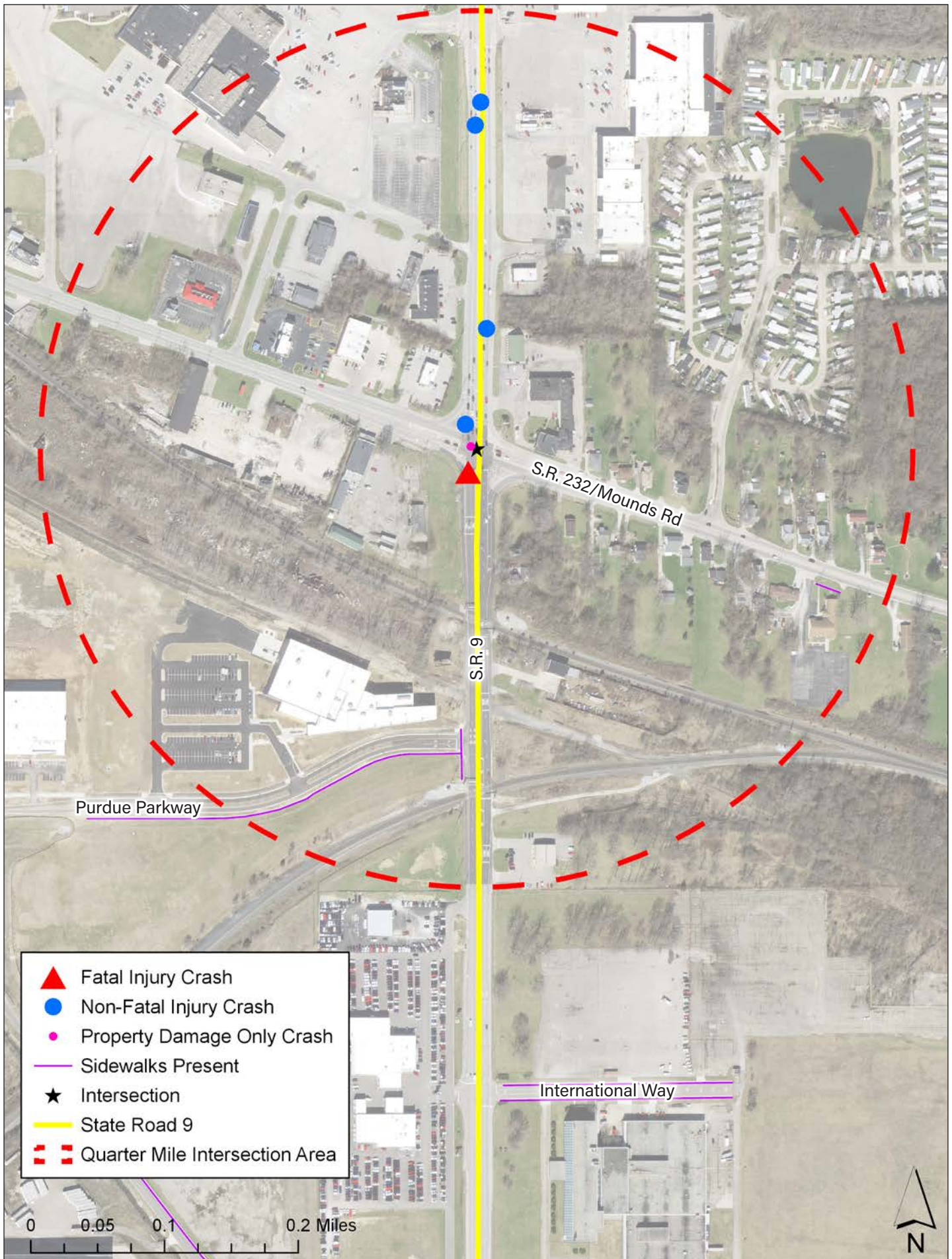


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4 - Mounds Mall Plaza

Two (2) non-motorized crashes occurred between 2008 and 2018. Both were non-fatal injury crashes just south of the intersection. There were six (6) pedestrians/pedalcyclists that crossed S.R. 9 at Mounds Mall Entrance on Thursday March 7, 2019. On this day it was 24 degrees and clear.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume	26,062	
Vehicles per Hour (veh/hr)	1,086	
Pedestrians Crossing S.R. 9	6	
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	2	6
Property Damage Only	0	2
Total	2	8
Pedestrian Amenities		
Sidewalk Present (ft)	0	
Sidewalk Proposed (ft)	1,368	
Crosswalk Present (ft)	0	
Crosswalk Proposed (ft)	437	

Recommended Crosswalk Markings

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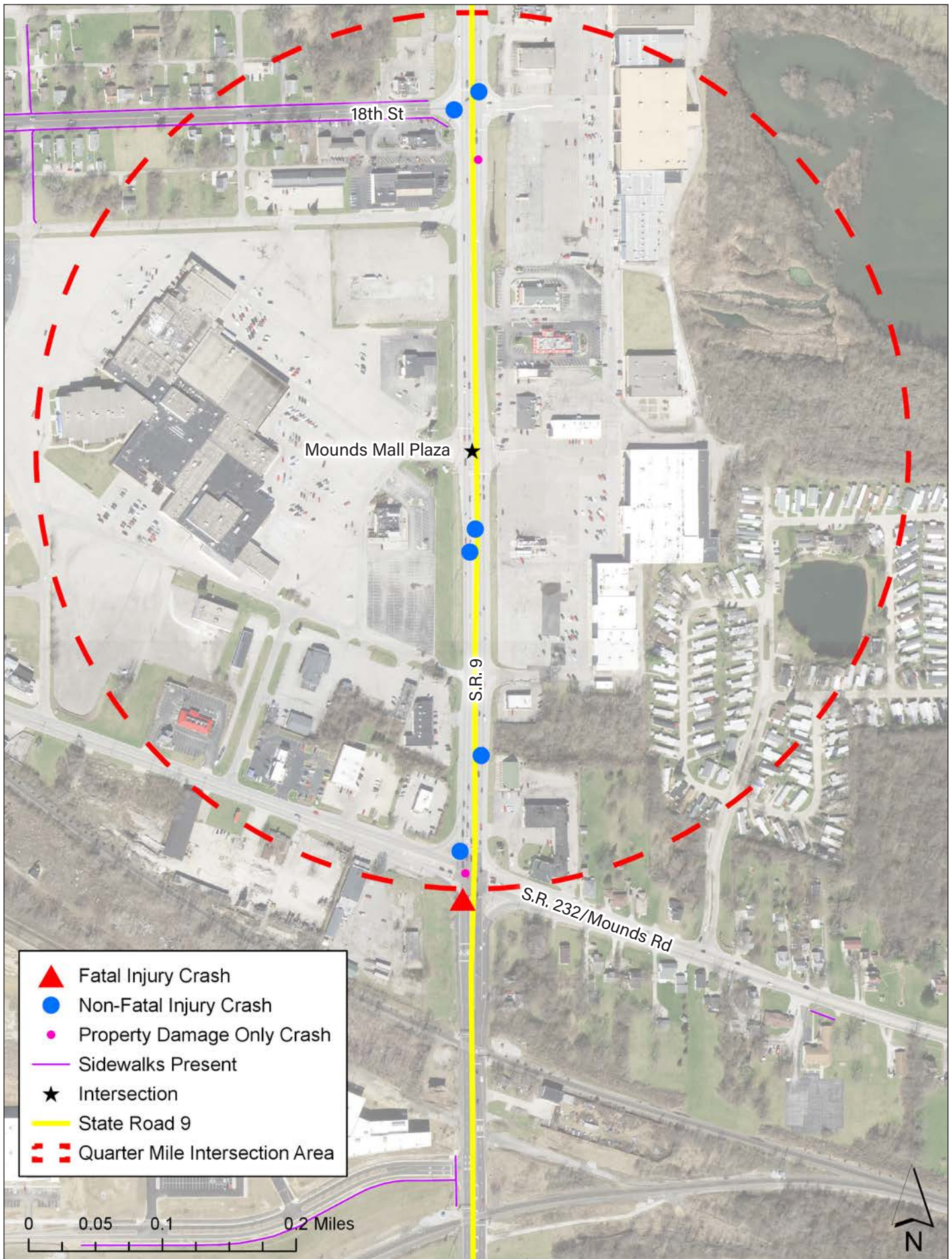


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5 - 18th Street

Three (3) non-motorized crashes occurred between 2008 and 2018. Two (2) non-fatal injury crashes were west and northeast of the intersection and one (1) property damage only crash was south of the intersection. There was one (1) pedestrian/pedalcyclist that crossed S.R. 9 at 18th Street on Thursday March 7, 2019. On this day it was 24 degrees and clear. There is some sidewalk present to the west of the intersection.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		31,326
Vehicles per Hour (veh/hr)		1,305
Pedestrians Crossing S.R. 9		1
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	2	3
Property Damage Only	1	1
Total	3	4
Pedestrian Amenities		
Sidewalk Present (ft)		821
Sidewalk Proposed (ft)		928
Crosswalk Present (ft)		0
Crosswalk Proposed (ft)		283

Recommended Crosswalk Markings

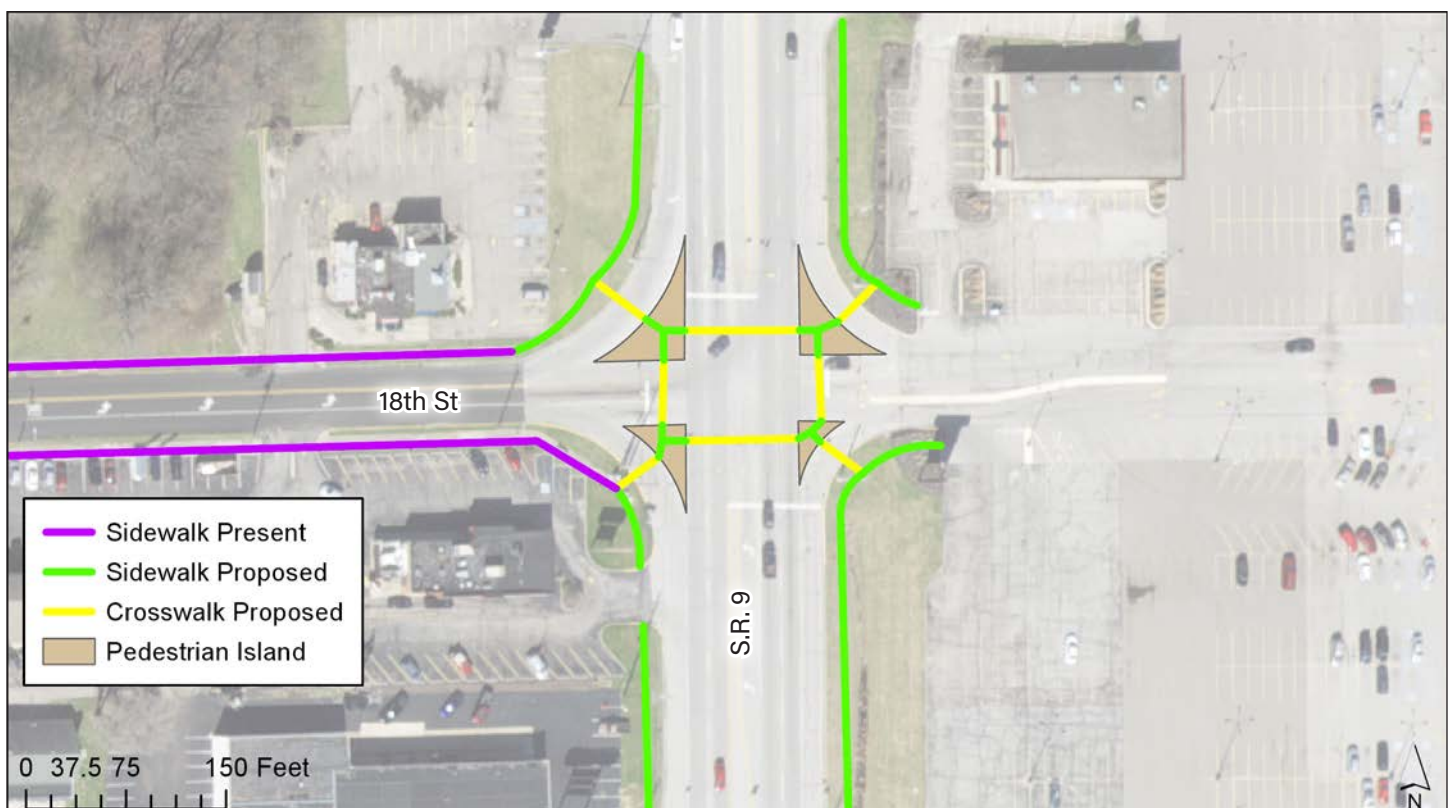
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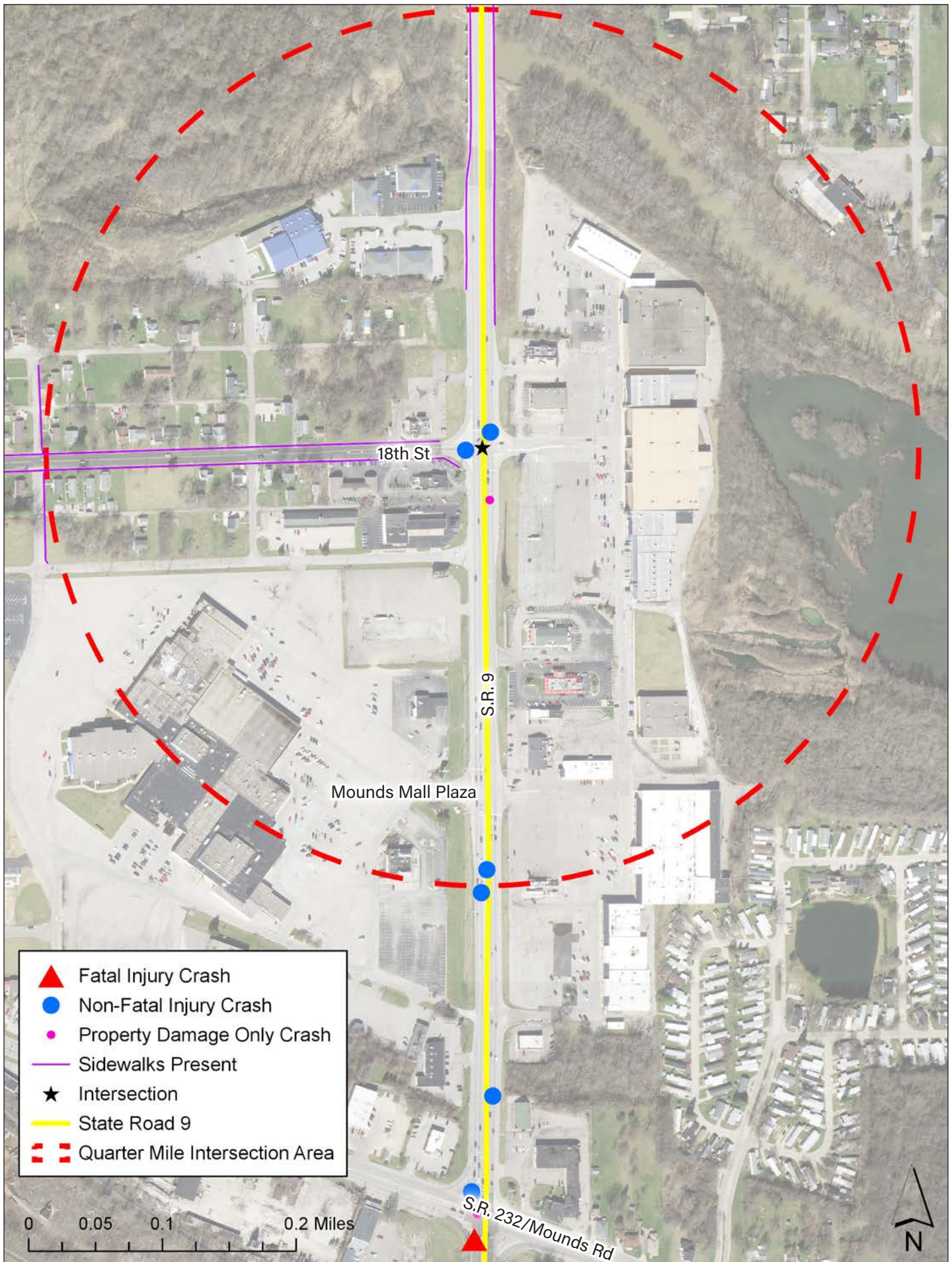


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6 - I-69 Southbound Ramps

Two (2) non-motorized crashes occurred between 2008 and 2018. The crashes were both non-fatal injury crashes just north of the intersection. There were two (2) pedestrians/pedalcyclists that crossed S.R. 9 at I-69 Southbound Ramps on Monday March 25, 2019. On this day it was 46 degrees and overcast.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		25,582
Vehicles per Hour (veh/hr)		1,066
Pedestrians Crossing S.R. 9		2
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	2	4
Property Damage Only	0	0
Total	2	4
Pedestrian Amenities		
Sidewalk Present (ft)		0
Sidewalk Proposed (ft)		1,056
Crosswalk Present (ft)		0
Crosswalk Proposed (ft)		306

Recommended Crosswalk Markings

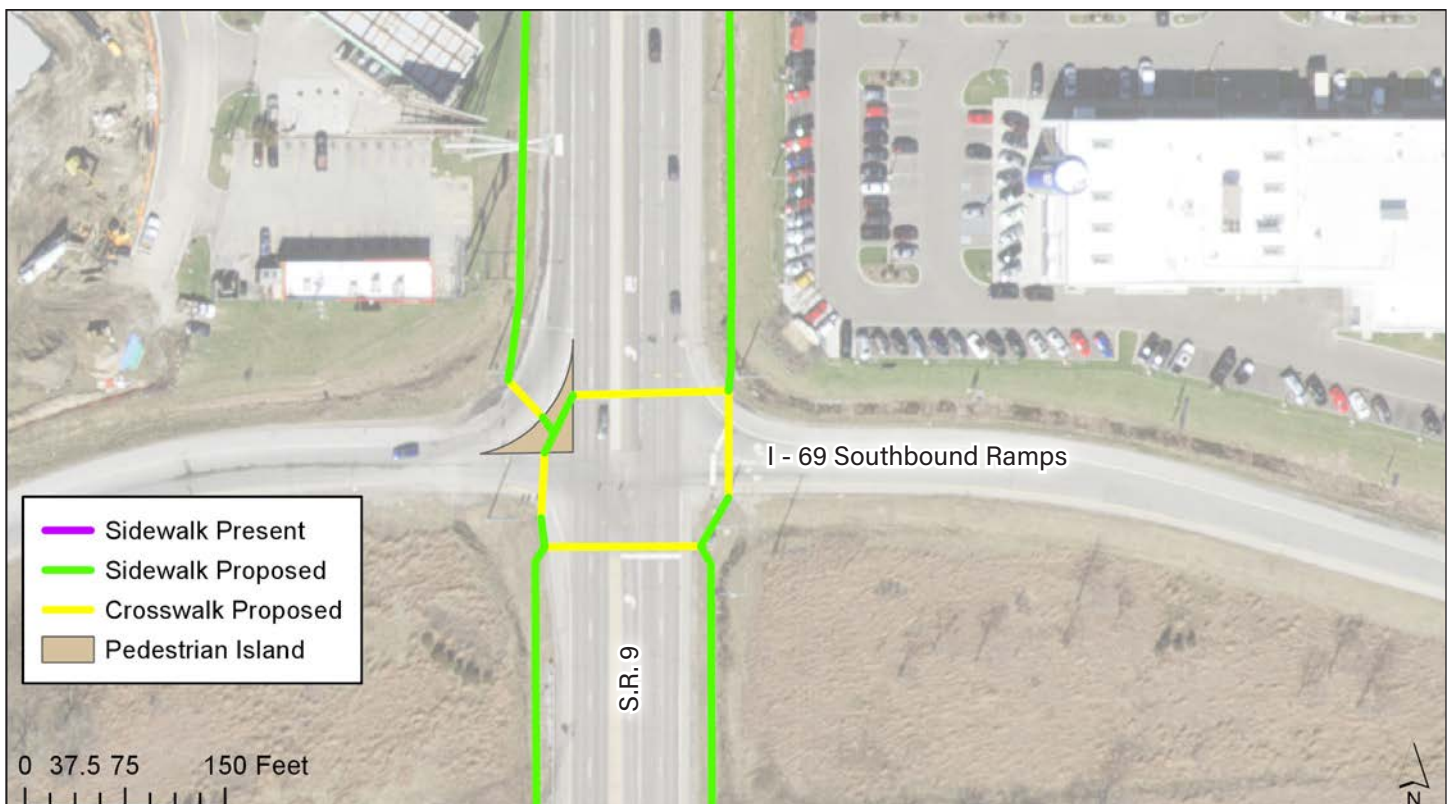
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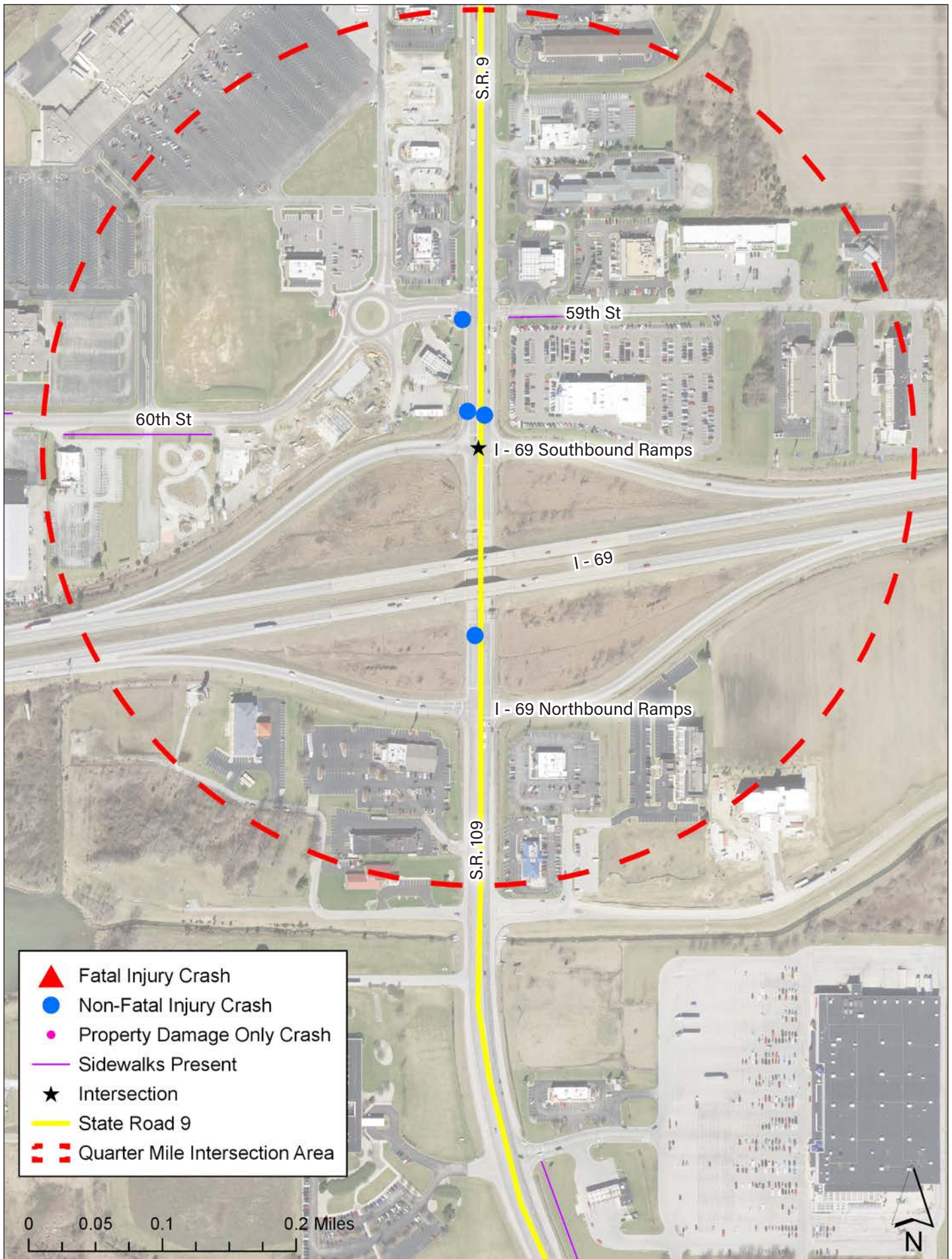


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7 - 53rd Street

Two (2) non-motorized crashes occurred between 2008 and 2018. One (1) fatal crash was just north of the intersection and one property damage only crash was in the intersection. There were four (4) pedestrians/pedalcyclists that crossed S.R. 9 at 53rd Street on Thursday March 21, 2019. On this day it was 42 degrees with light rain. There is some sidewalk present to the east of the intersection.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume	39,545	
Vehicles per Hour (veh/hr)	1,648	
Pedestrians Crossing S.R. 9	4	
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	1	1
Non-Fatal Injury	0	0
Property Damage Only	1	1
Total	2	2
Pedestrian Amenities		
Sidewalk Present (ft)	144	
Sidewalk Proposed (ft)	2,254	
Crosswalk Present (ft)	0	
Crosswalk Proposed (ft)	408	

Recommended Crosswalk Markings

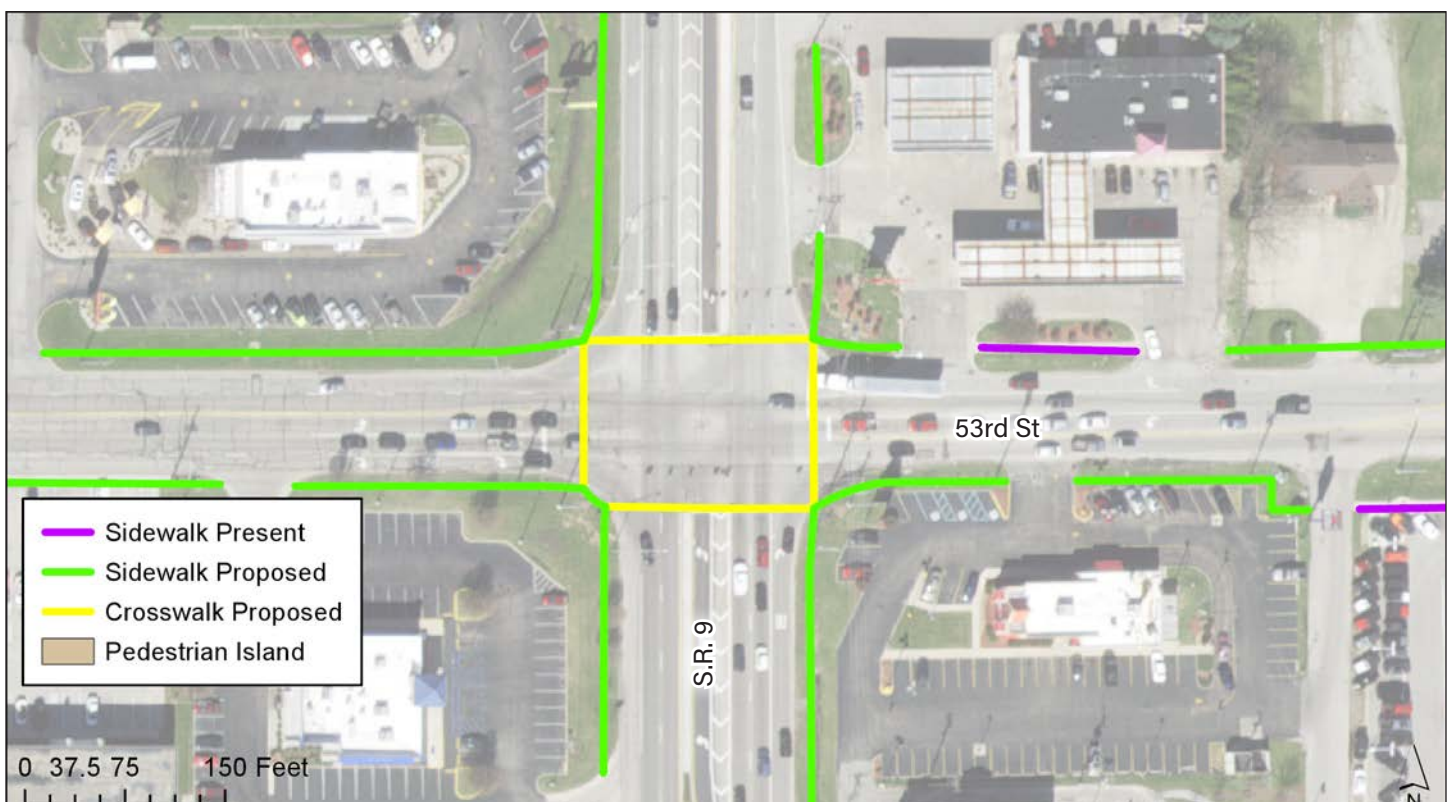
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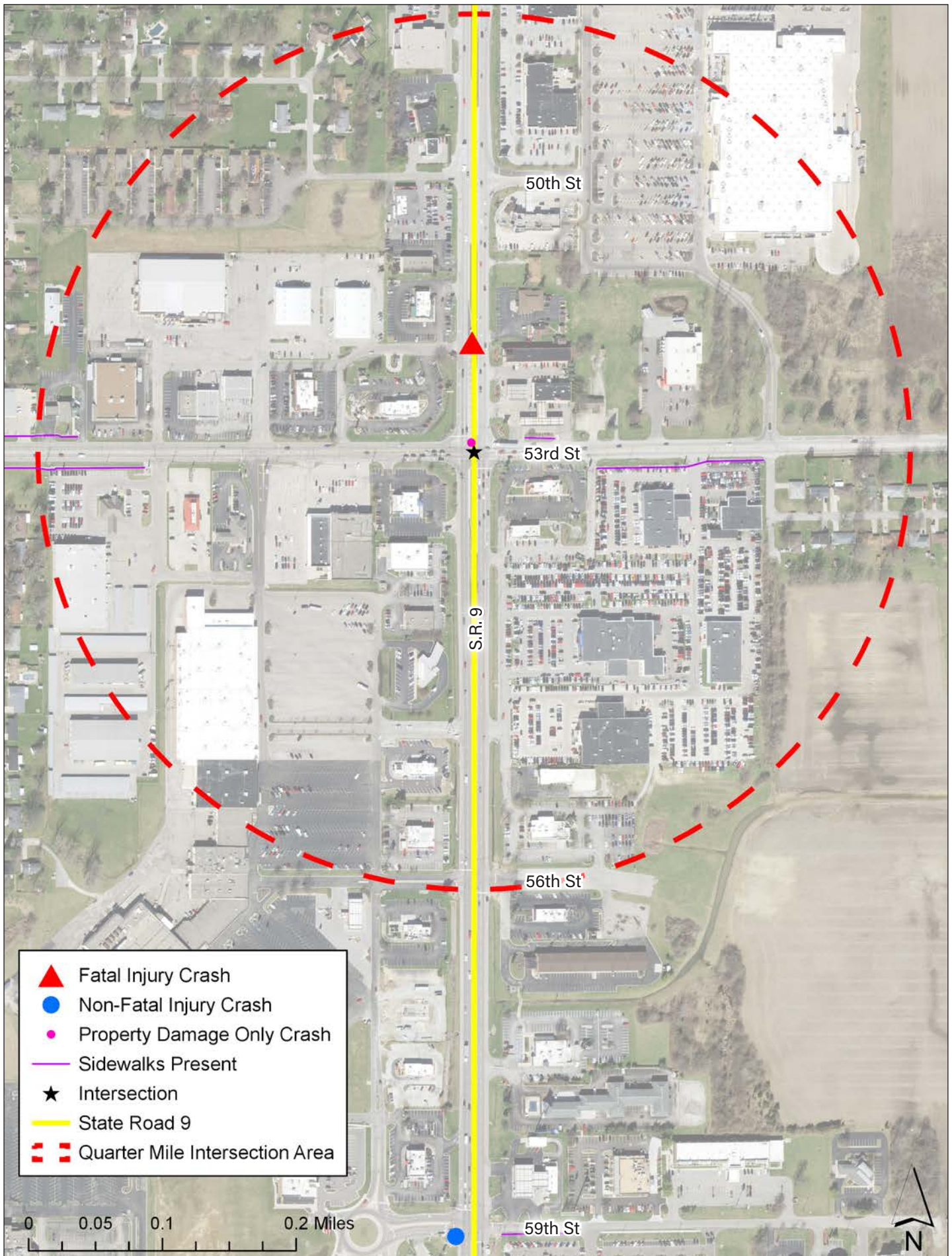


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8 - I-69 Northbound Ramps

One (1) non-motorized crash occurred between 2008 and 2018. That crash was a non-fatal injury crash just north of the intersection. There were three (3) pedestrians/pedalcyclists that crossed S.R. 9 at I-69 Northbound Ramps on Monday March 25, 2019. On this day it was 46 degrees and overcast. Speed data for this intersection was missing from the NPMRDS data set but a forecasted speed was used and calibrated.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		22,314
Vehicles per Hour (veh/hr)		930
Pedestrians Crossing S.R. 9		3
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	1	4
Property Damage Only	0	0
Total	1	4
Pedestrian Amenities		
Sidewalk Present (ft)		0
Sidewalk Proposed (ft)		962
Crosswalk Proposed (ft)		0
Crosswalk Proposed (ft)		333

Recommended Crosswalk Markings

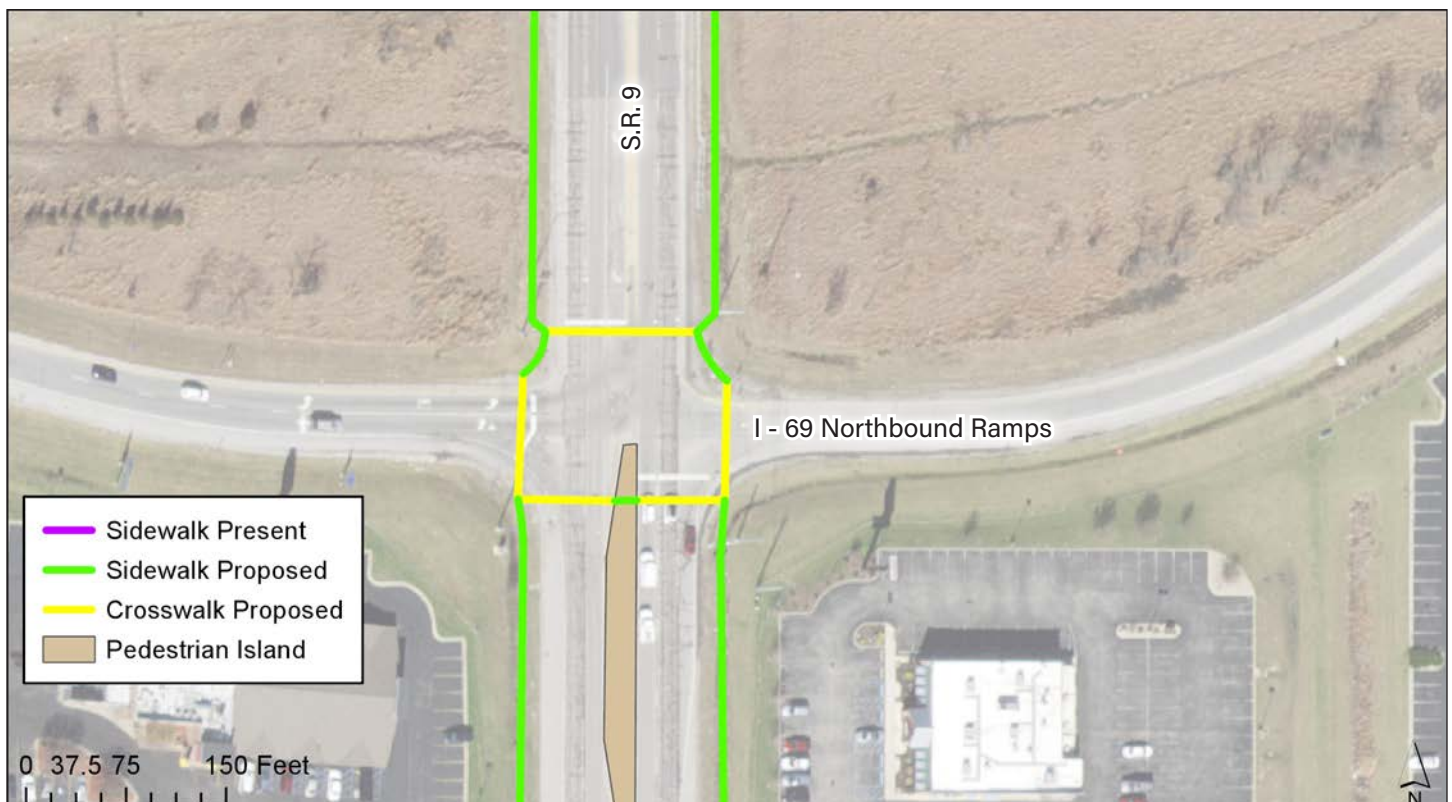
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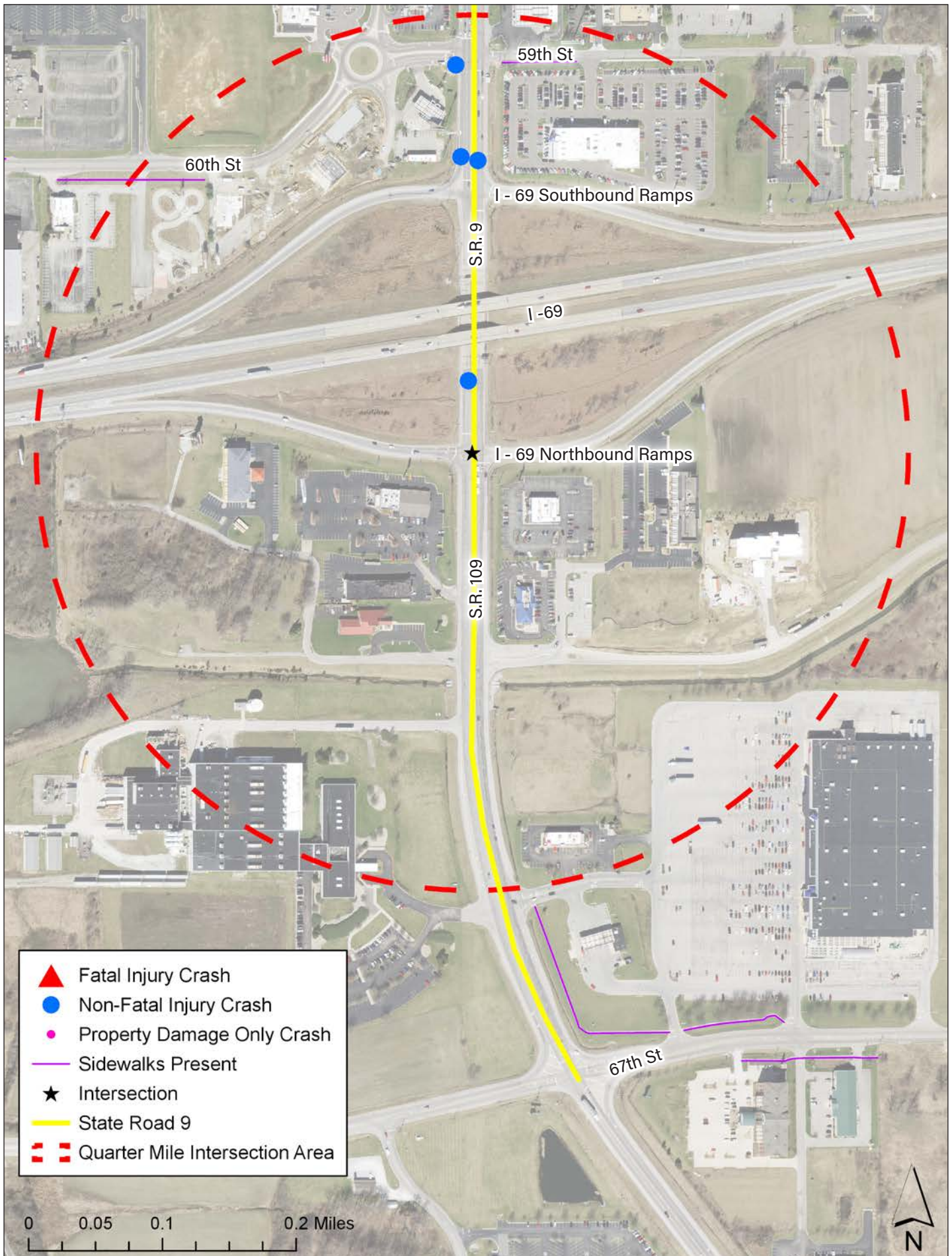


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Ladder





9 - 59th Street

One (1) non-motorized crash occurred between 2008 and 2018. The crash was a non-fatal injury crash just southwest of the intersection. There were seven (7) pedestrians/pedalcyclists that crossed S.R. 9 at 59th Street on Thursday March 21, 2019. On this day it was 42 degrees with light rain. There is some sidewalk present to the southeast of the intersection.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume	27,983	
Vehicles per Hour (veh/hr)	1,166	
Pedestrians Crossing S.R. 9	7	
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	1	4
Property Damage Only	0	0
Total	1	4
Pedestrian Amenities		
Sidewalk Present (ft)	90	
Sidewalk Proposed (ft)	1,423	
Crosswalk Present (ft)	0	
Crosswalk Proposed (ft)	348	

Recommended Crosswalk Markings

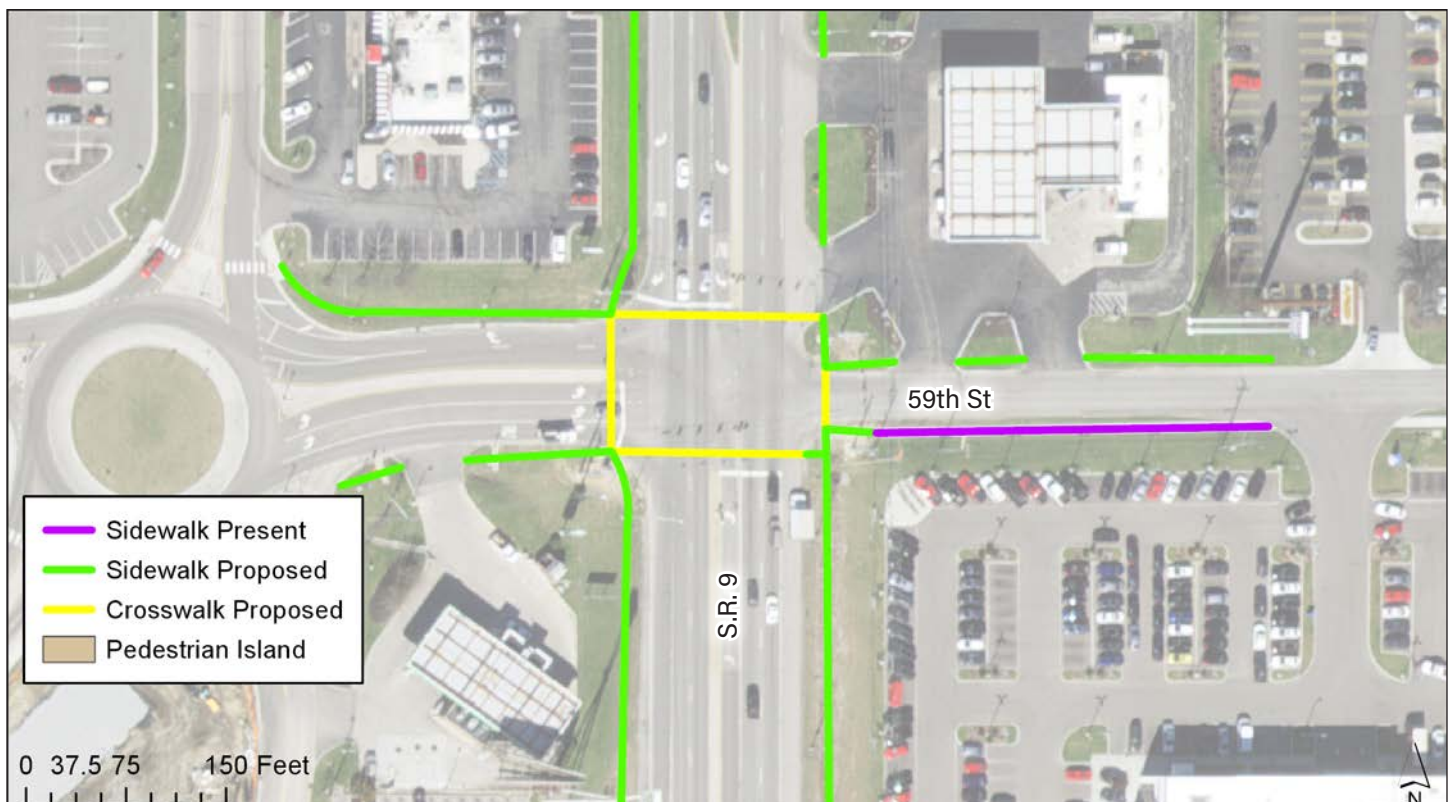
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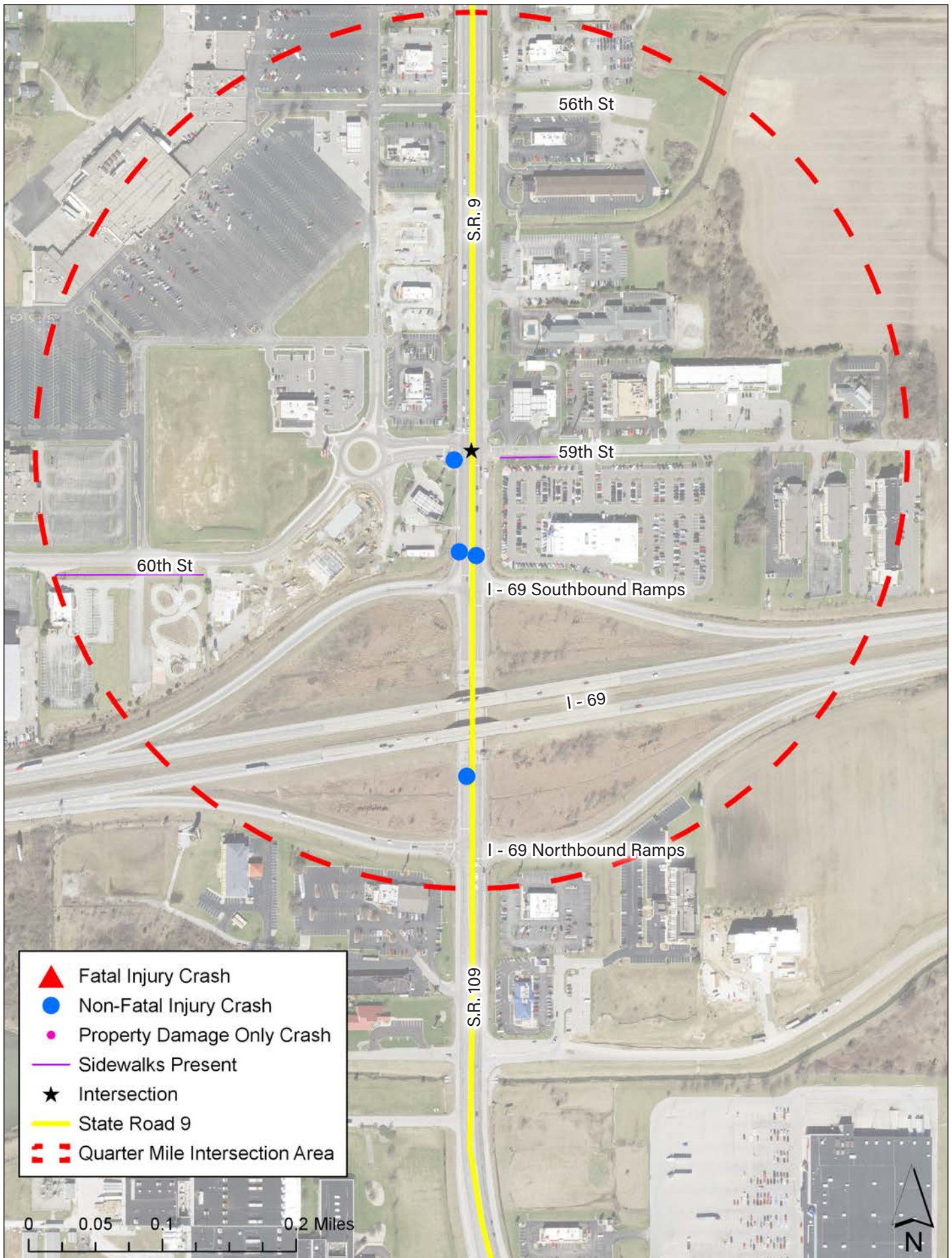


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Ladder





10 - 38th Street

38th Street connects neighborhoods to the east of S.R. 9 to General Pulaski Park that is within 0.25 miles west of S.R. 9. Two (2) non-motorized crashes occurred between 2008 and 2018. One (1) non-fatal injury crash was just east of the intersection and one (1) property damage only crash was in the intersection. There were six (6) pedestrians/pedalcyclists that crossed S.R. 9 at 38th Street on Tuesday March 12, 2019. On this day it was 35 degrees and clear. There is a significant amount of sidewalk present around the intersection.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume	38,448	
Vehicles per Hour (veh/hr)	1,602	
Pedestrians Crossing S.R. 9	6	
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	1	1
Property Damage Only	1	1
Total	2	2
Pedestrian Amenities		
Sidewalk Present (ft)	2,744	
Sidewalk Proposed (ft)	904	
Crosswalk Proposed (ft)	0	
Crosswalk Proposed (ft)	419	

Recommended Crosswalk Markings

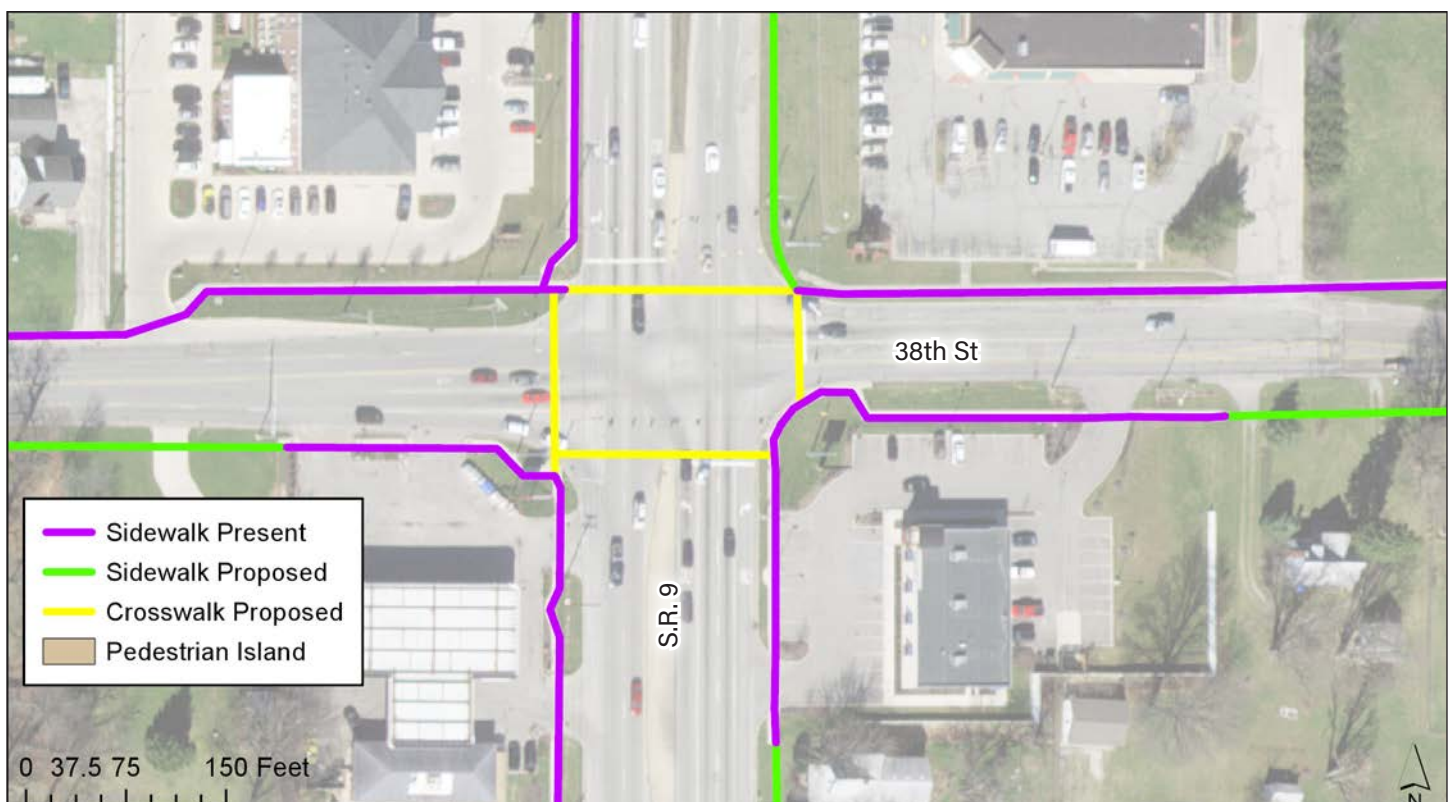
Continental

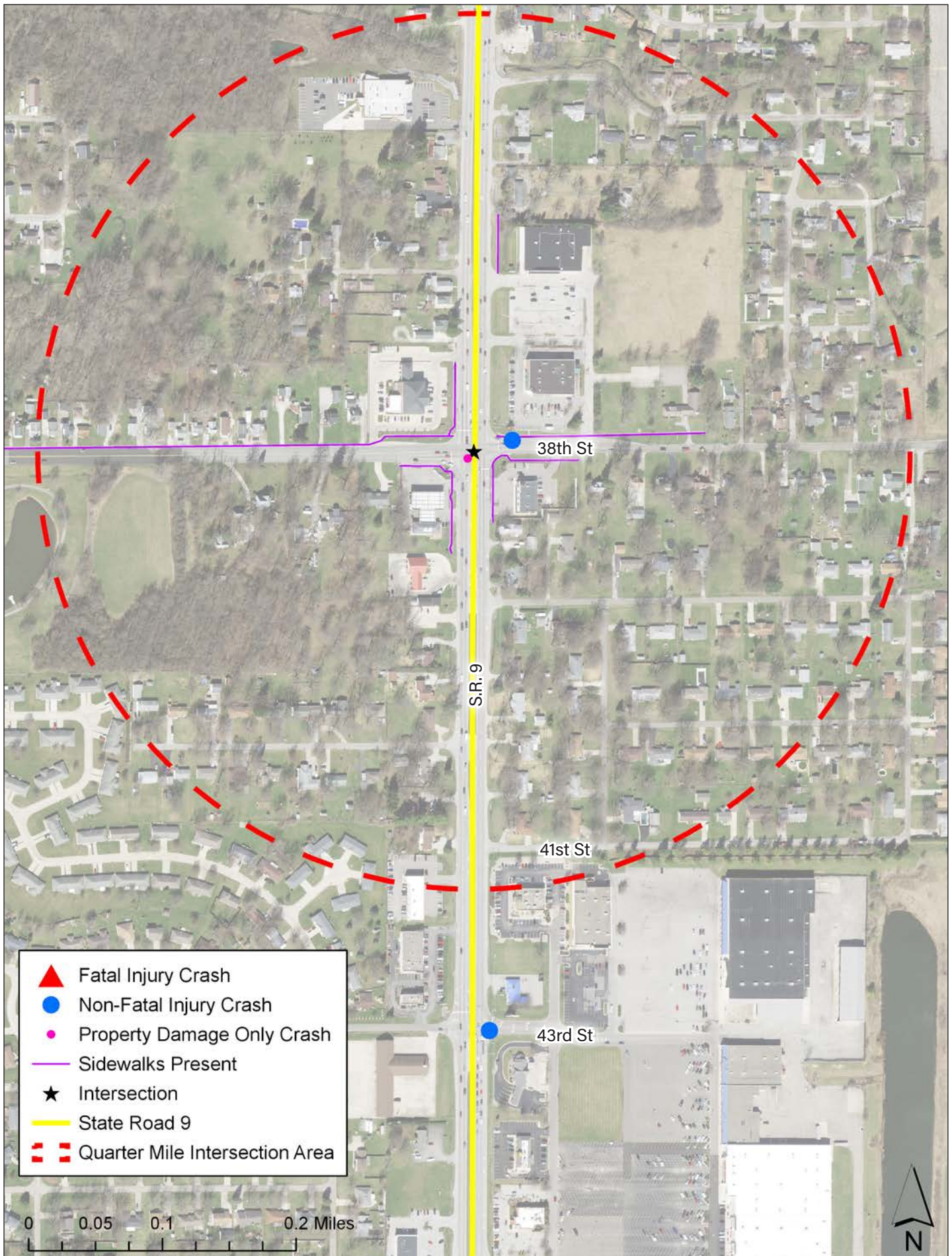


Zebra



Ladder





11 - S.R. 32/ University Blvd

One (1) non-motorized crash occurred between 2008 and 2018. The crash was a non-fatal injury crash just north of the intersection. There were zero (0) pedestrians/pedalcyclists that crossed S.R. 9 at S.R. 32/University Blvd on Tuesday March 19, 2019. On this day it was 31 degrees and clear. There is some sidewalk present to the west of the intersection.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume	29,275	
Vehicles per Hour (veh/hr)	1,220	
Pedestrians Crossing S.R. 9	0	
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	1
Non-Fatal Injury	1	1
Property Damage Only	0	0
Total	1	2
Pedestrian Amenities		
Sidewalk Present (ft)	348	
Sidewalk Proposed (ft)	2,019	
Crosswalk Present (ft)	0	
Crosswalk Proposed (ft)	328	

Recommended Crosswalk Markings

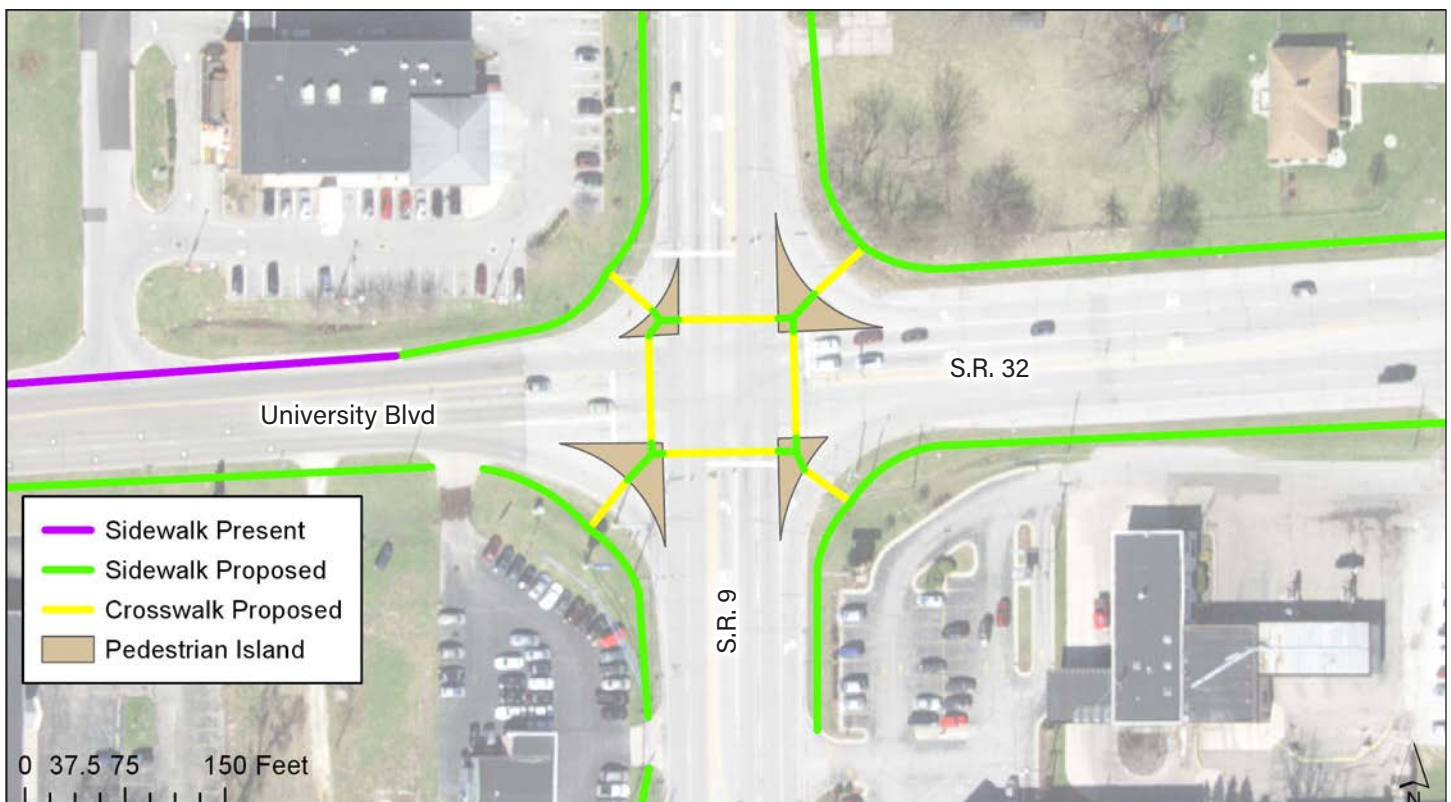
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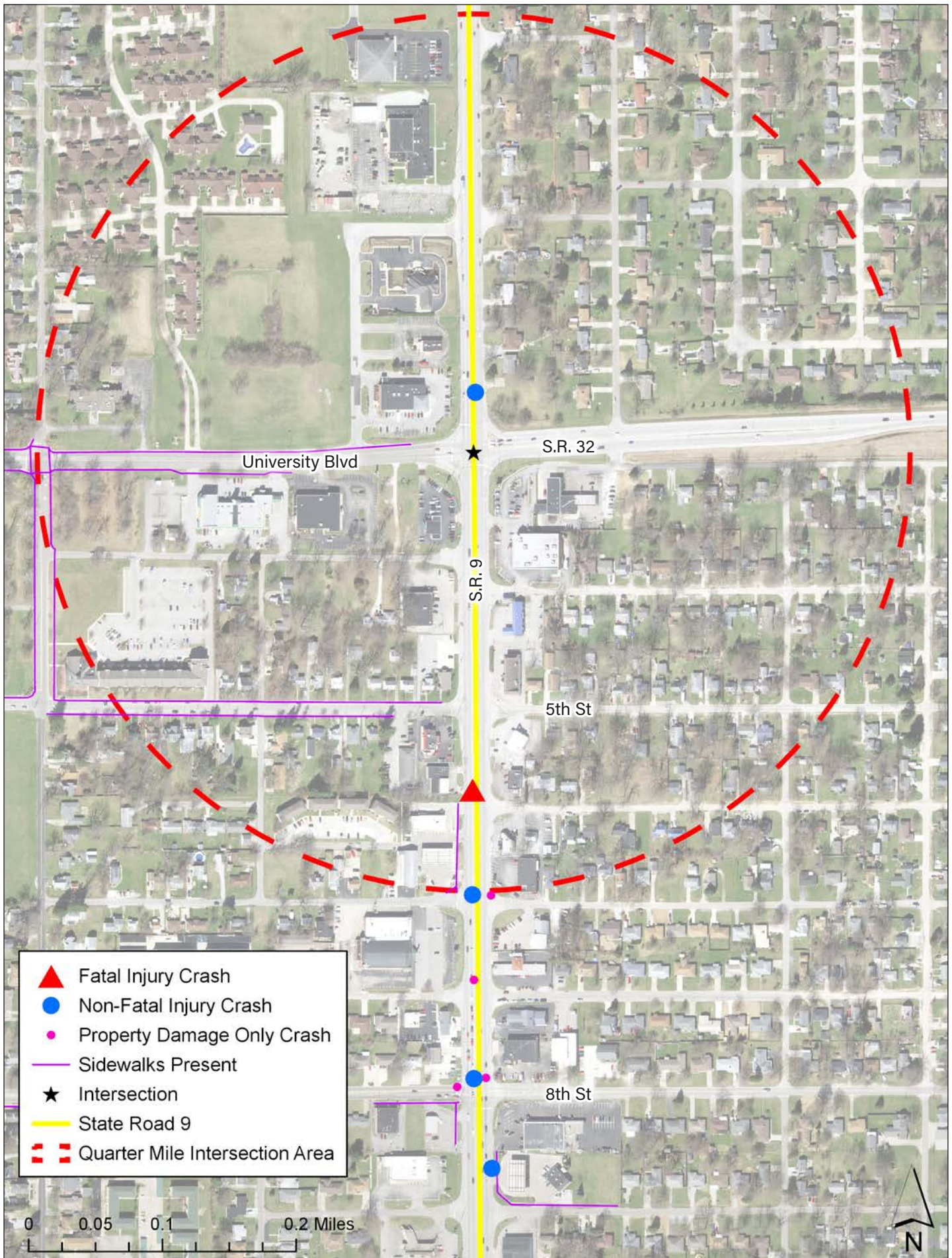


Zebra



Ladder





12 - 43rd Street

43rd Street connects neighborhoods to the west of S.R. 9 to retail and commercial to the east of S.R. 9. One (1) non-motorized crash occurred between 2008 and 2018. The crash was a non-fatal injury crash just east of the intersection. There were nine (9) pedestrians/pedalcyclists that crossed S.R. 9 at 43rd Street on Tuesday March 12, 2019. On this day it was 35 degrees and clear.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		31,599
Vehicles per Hour (veh/hr)		1,317
Pedestrians Crossing S.R. 9		9
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	1	1
Property Damage Only	0	0
Total	1	1
Pedestrian Amenities		
Sidewalk Present (ft)		0
Sidewalk Proposed (ft)		1,754
Crosswalk Present (ft)		0
Crosswalk Proposed (ft)		404

Recommended Crosswalk Markings

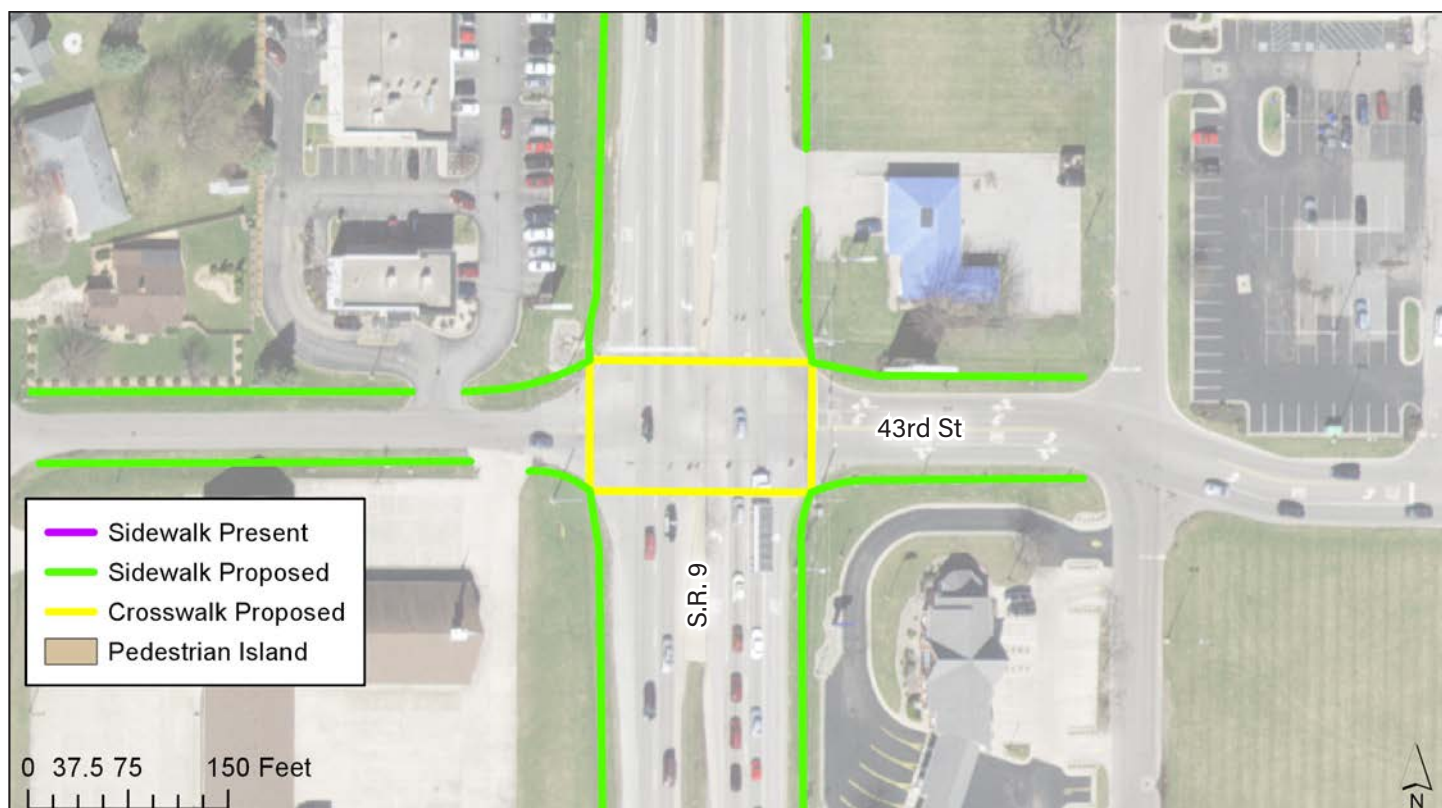
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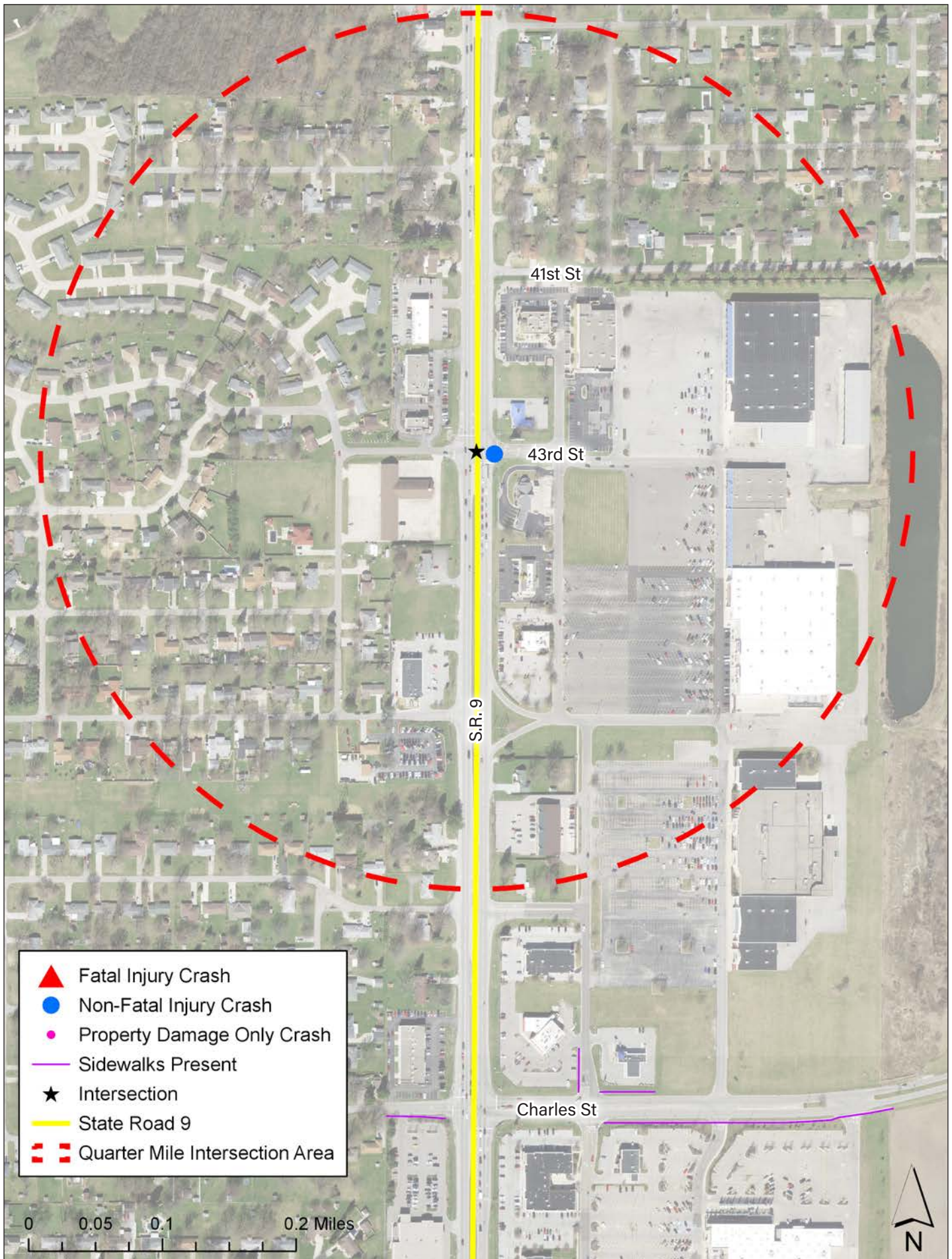


Zebra



Ladder





13 - 32nd Street

One (1) non-motorized crash occurred between 2008 and 2018. The crash was a property damage only crash just south of the intersection. There were three (3) pedestrians/pedalcyclists that crossed S.R. 9 at 32nd Street on Tuesday March 19, 2019. On this day it was 31 degrees and clear. There is some sidewalk present to the northwest of the intersection.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		26,255
Vehicles per Hour (veh/hr)		1,094
Pedestrians Crossing S.R. 9		3
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	0	0
Property Damage Only	1	2
Total	1	2
Pedestrian Amenities		
Sidewalk Present (ft)		896
Sidewalk Proposed (ft)		1,362
Crosswalk Present (ft)		0
Crosswalk Proposed (ft)		346

Recommended Crosswalk Markings

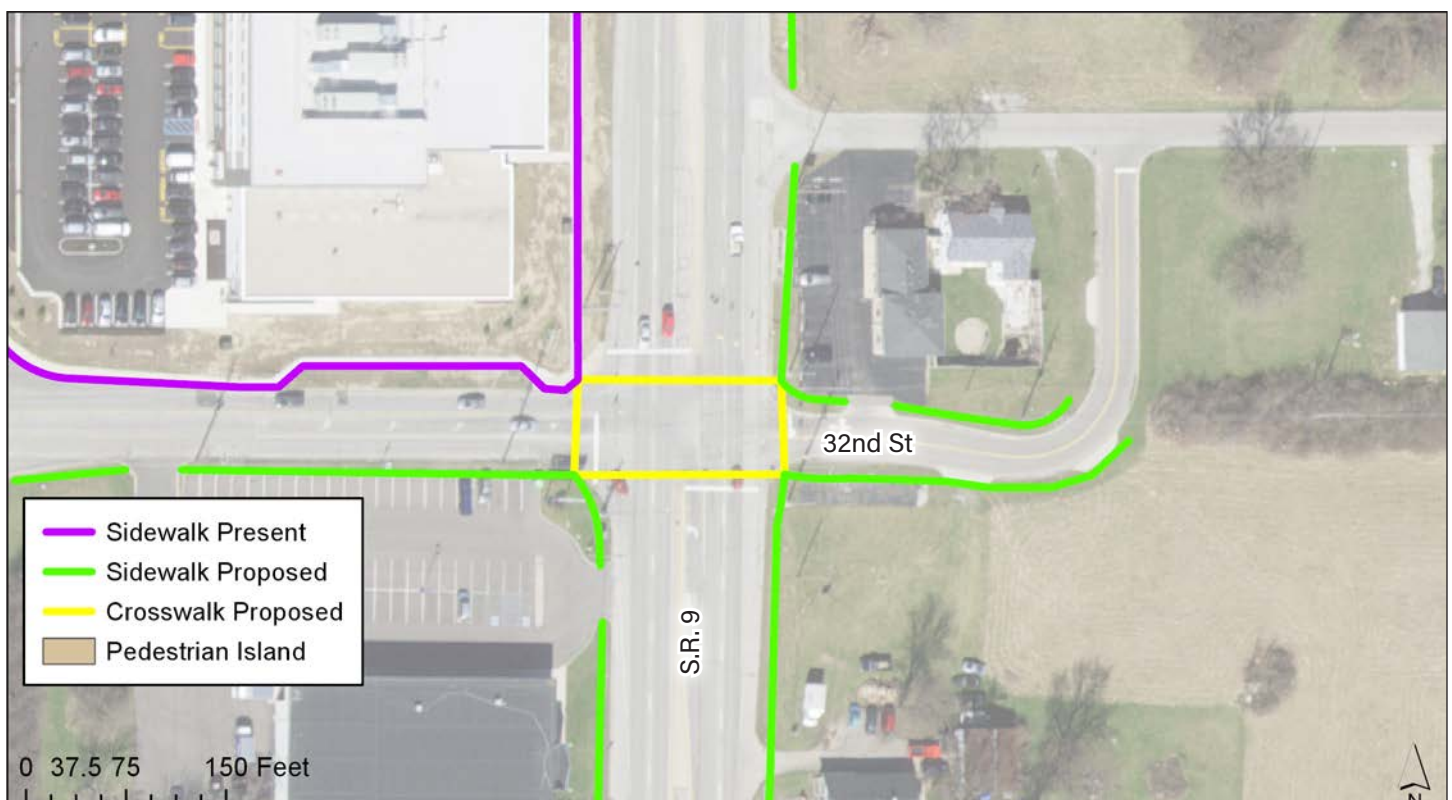
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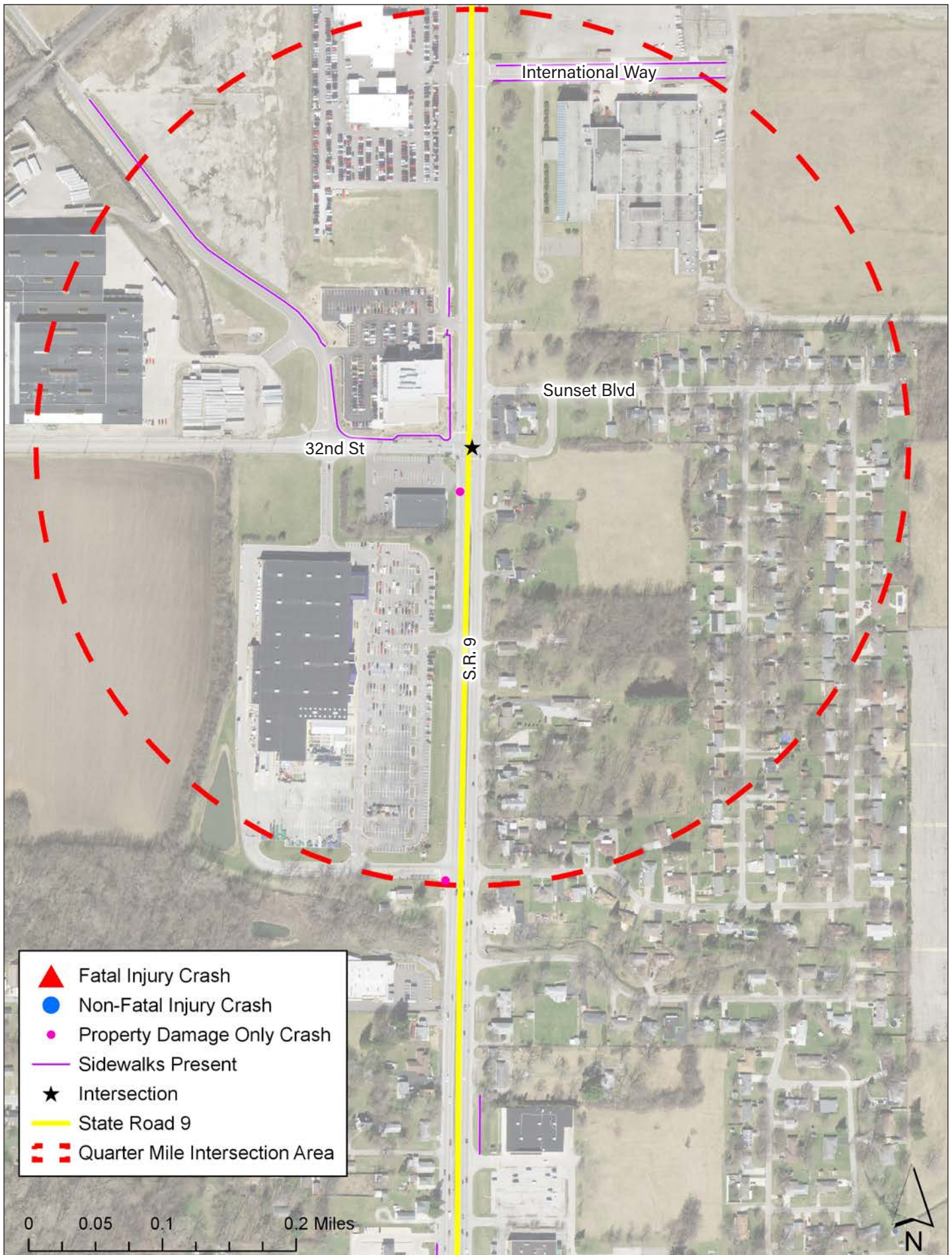


Zebra



Ladder





14 - Charles Street

Charles Street connects neighborhoods to the west of S.R. 9 to retail and commercial to the east of S.R. 9. Zero (0) non-motorized crashes occurred between 2008 and 2018. There was one (1) pedestrian/pedalcyclist that crossed S.R. 9 at Charles Street on Thursday March 21, 2019. On this day it was 42 degrees with light rain. There is some sidewalk present to the southwest of the intersection.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume	29,701	
Vehicles per Hour (veh/hr)	1,238	
Pedestrians Crossing S.R. 9	1	
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	1
Non-Fatal Injury	0	0
Property Damage Only	0	0
Total	0	1
Pedestrian Amenities		
Sidewalk Present (ft)	313	
Sidewalk Proposed (ft)	1,881	
Crosswalk Proposed (ft)	0	
Crosswalk Proposed (ft)	435	

Recommended Crosswalk Markings

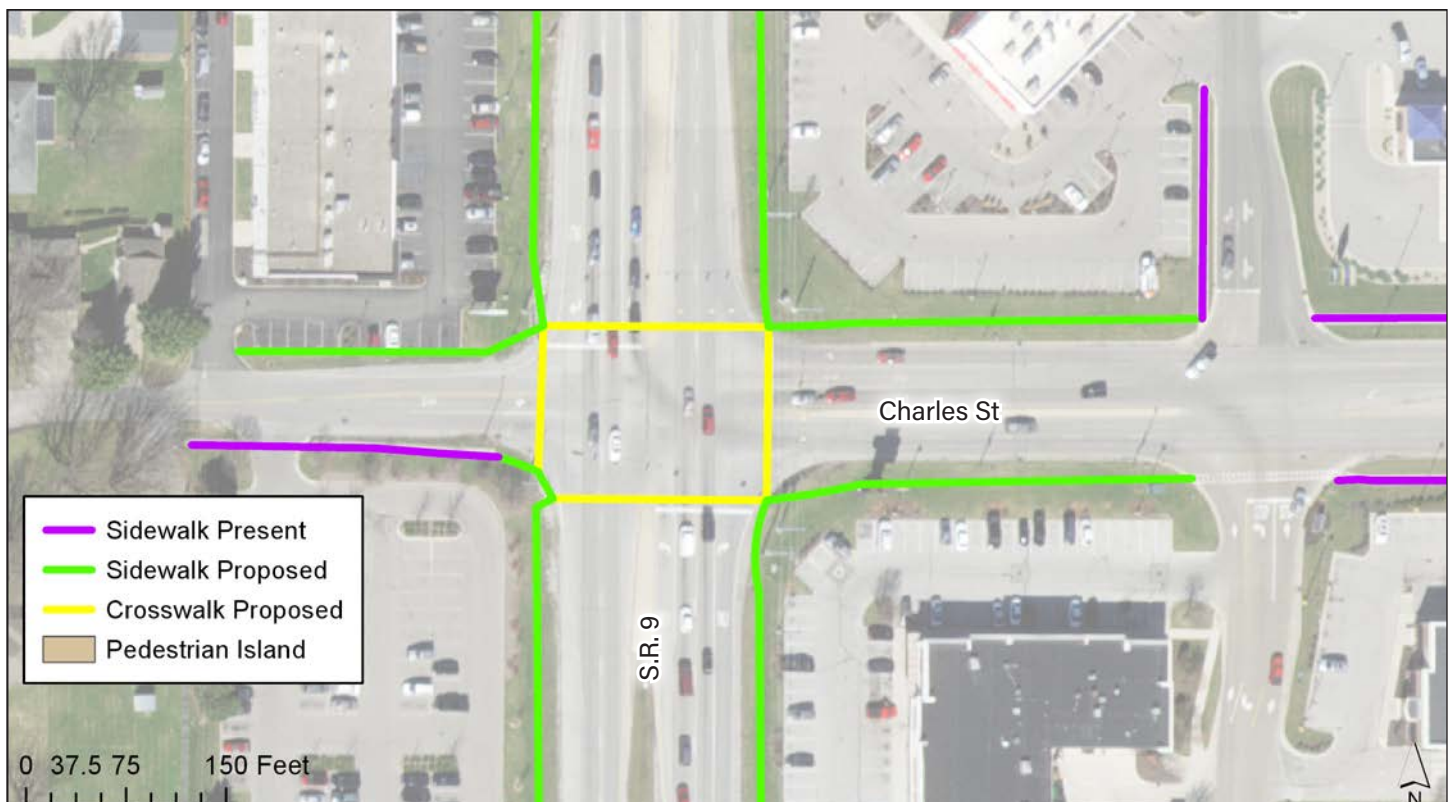
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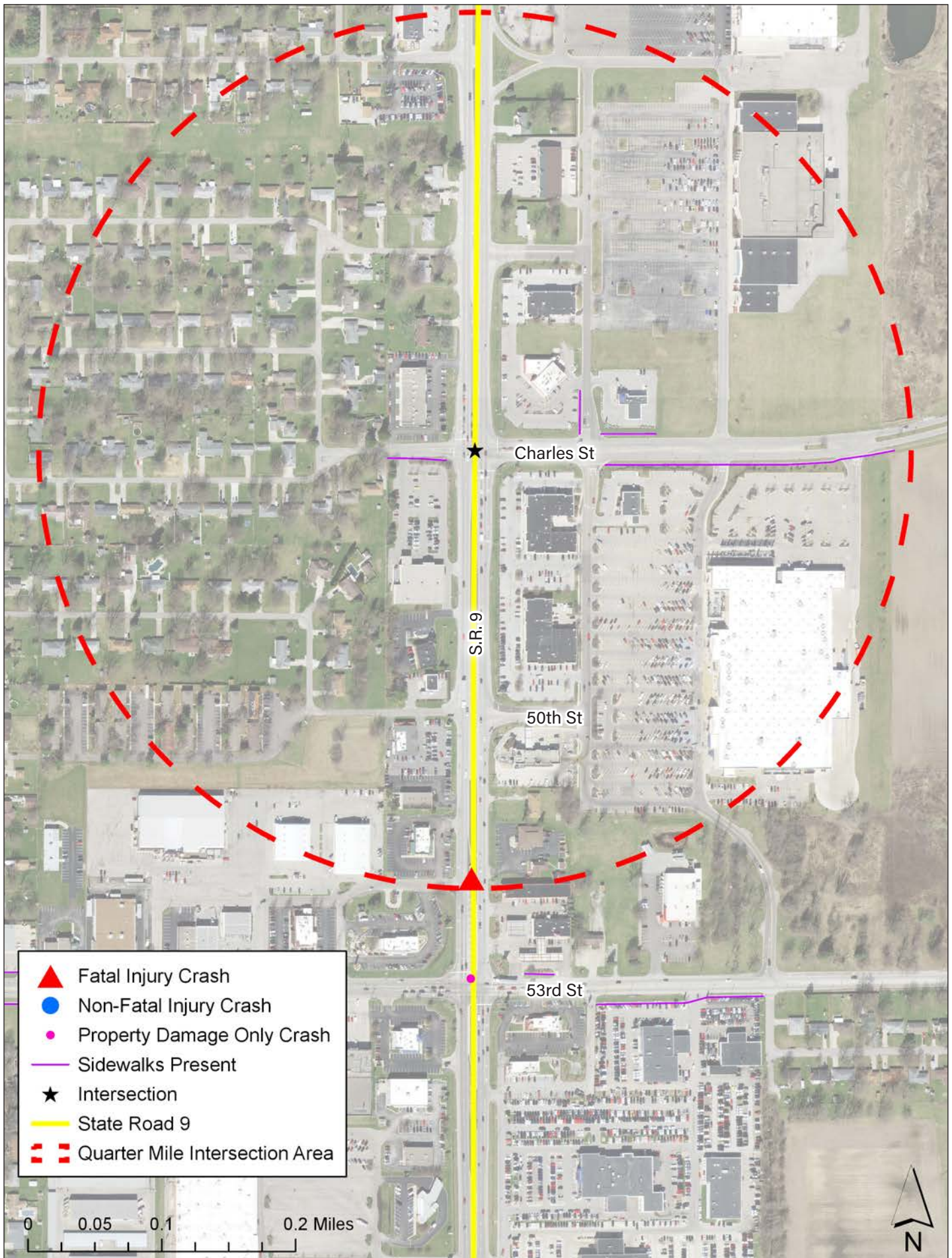


Zebra



Ladder





15 - Cross Street

Cross Street connects neighborhoods to the east of S.R. 9 to shopping and recreation at Killbuck Creek to the west of S.R. 9. Zero (0) non-motorized crashes occurred between 2008 and 2018. There were zero (0) pedestrians/pedalcyclists that crossed S.R. 9 at Cross Street on Tuesday March 5, 2019. On this day it was 9 degrees and clear.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume	18,661	
Vehicles per Hour (veh/hr)	778	
Pedestrians Crossing S.R. 9	0	
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	1
Non-Fatal Injury	0	0
Property Damage Only	0	0
Total	0	1
Pedestrian Amenities		
Sidewalk Present (ft)	0	
Sidewalk Proposed (ft)	2,526	
Crosswalk Present (ft)	0	
Crosswalk Proposed (ft)	322	

Recommended Crosswalk Markings

Continental

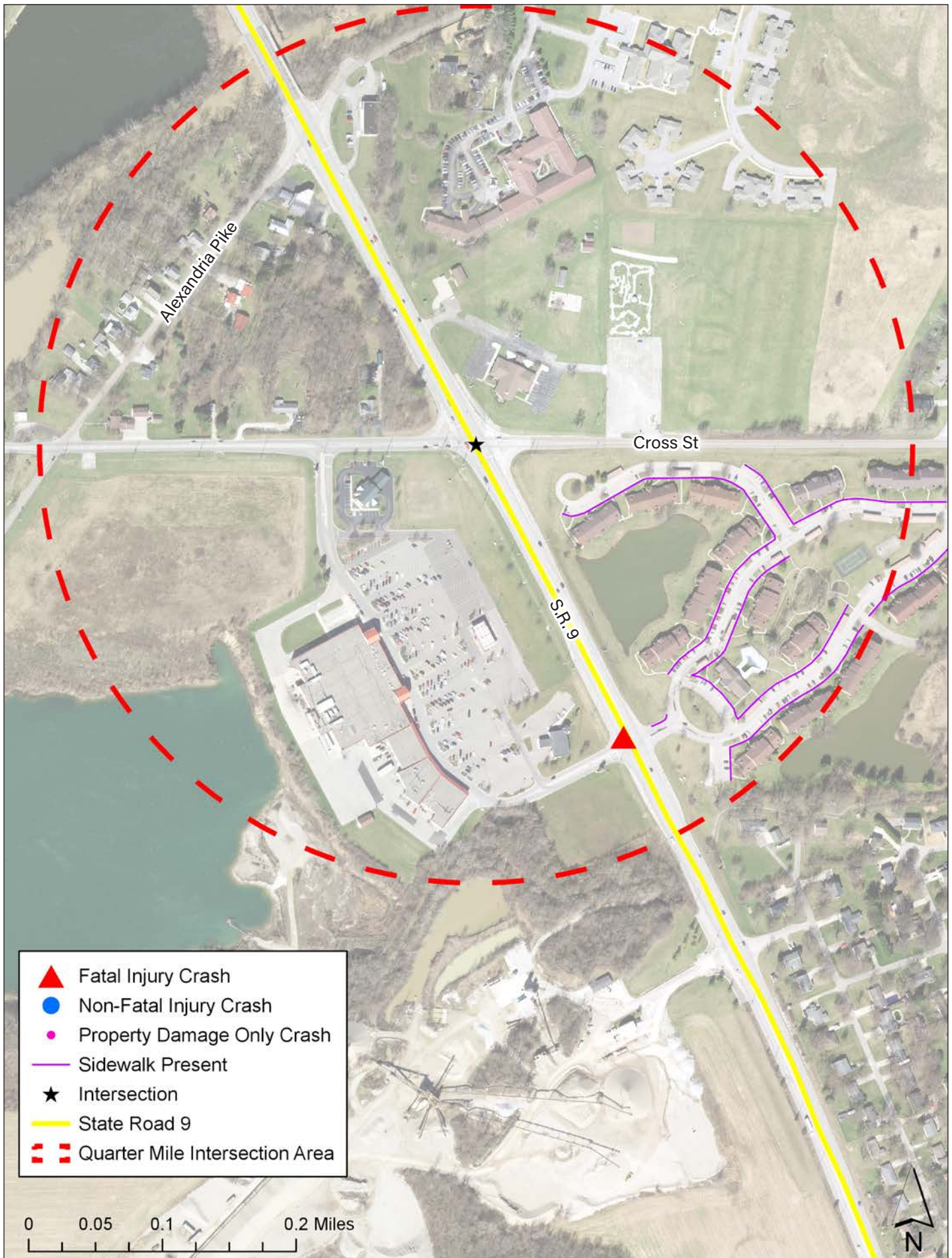


Zebra



Ladder





16 - 56th Street

Zero (0) non-motorized crashes occurred between 2008 and 2018. There were 43 pedestrians/pedalcyclists that crossed S.R. 9 at Applewood Signalized Entrance on Thursday March 21, 2019. On this day it was 42 degrees with light rain. The pedestrian/pedalcyclist count was the highest of any intersection and is expected to increase during warmer, sunnier days.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		25,715
Vehicles per Hour (veh/hr)		1,071
Pedestrians Crossing S.R. 9		43
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	0	1
Property Damage Only	0	0
Total	0	1
Pedestrian Amenities		
Sidewalk Present (ft)		0
Sidewalk Proposed (ft)		1,876
Crosswalk Present (ft)		0
Crosswalk Proposed (ft)		356

Recommended Crosswalk Markings

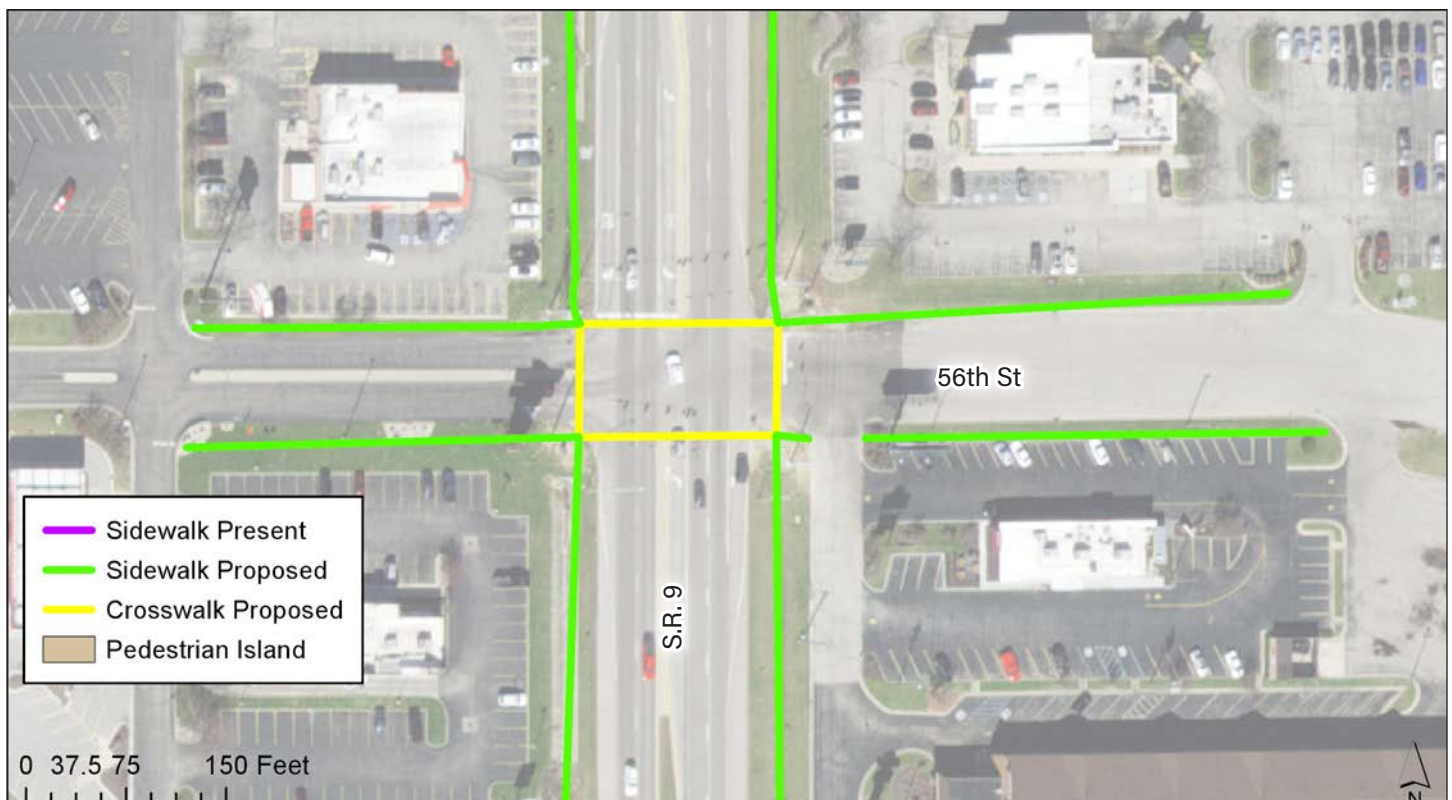
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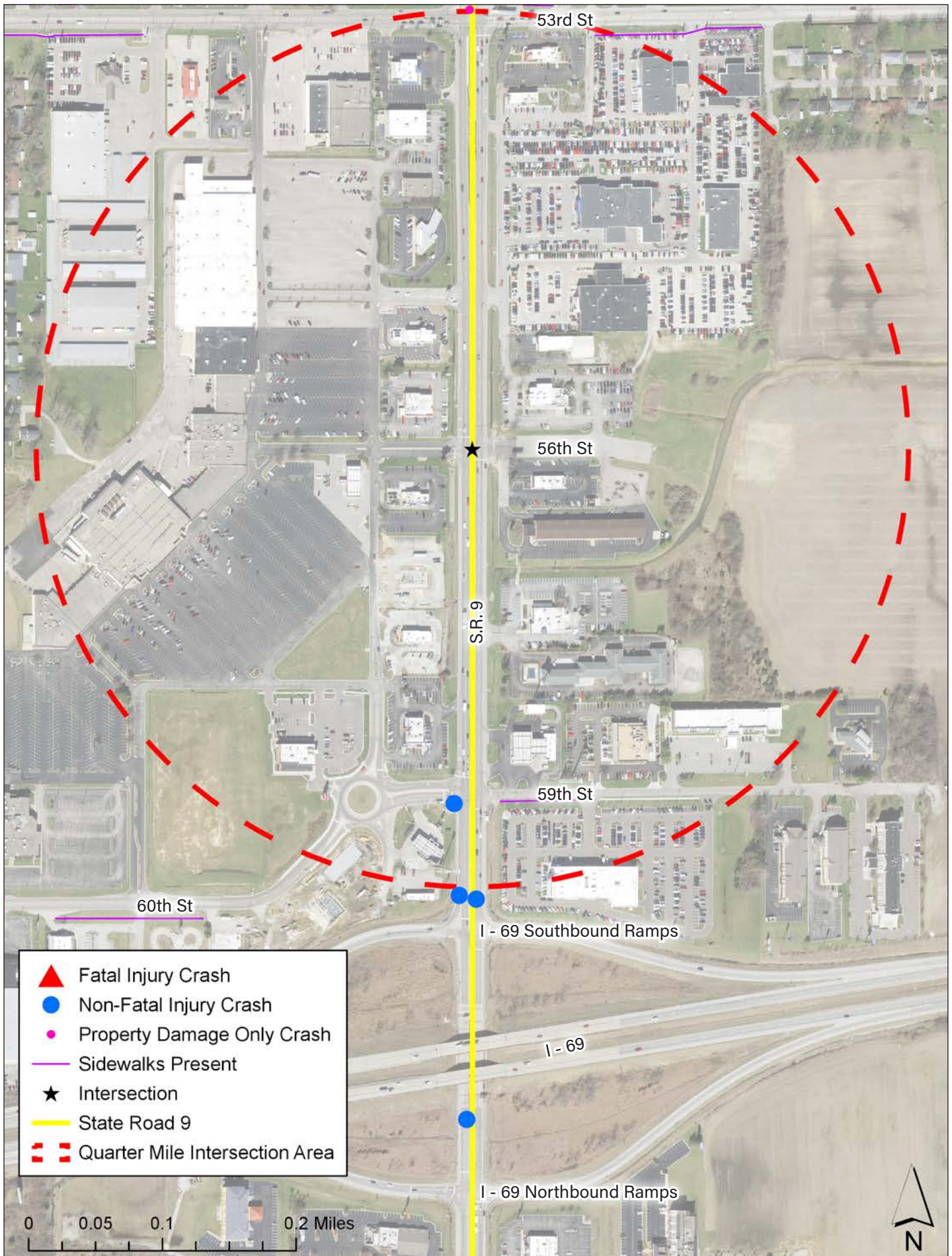


Zebra



Ladder





17 - International Way

Zero (0) non-motorized crashes occurred between 2008 and 2018. There were four (4) pedestrians/pedalcyclists that crossed S.R. 9 at International Way on Tuesday March 12, 2019. On this day it was 35 degrees and clear. There is some sidewalk present to the east of the intersection.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		25,392
Vehicles per Hour (veh/hr)		1,058
Pedestrians Crossing S.R. 9		4
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	0	0
Property Damage Only	0	1
Total	0	1
Pedestrian Amenities		
Sidewalk Present (ft)		1,629
Sidewalk Proposed (ft)		1,176
Crosswalk Present (ft)		0
Crosswalk Proposed (ft)		372

Recommended Crosswalk Markings

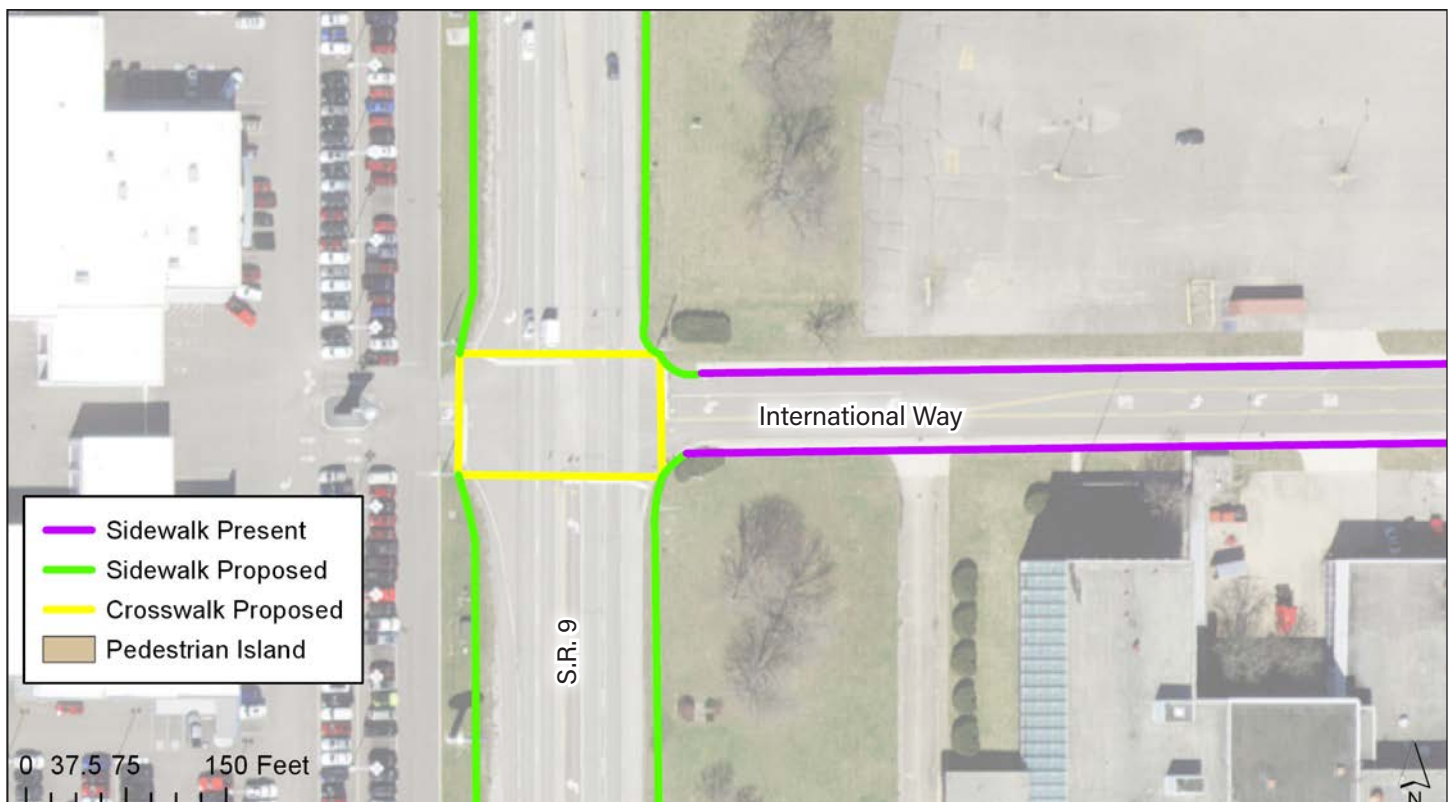
Continental

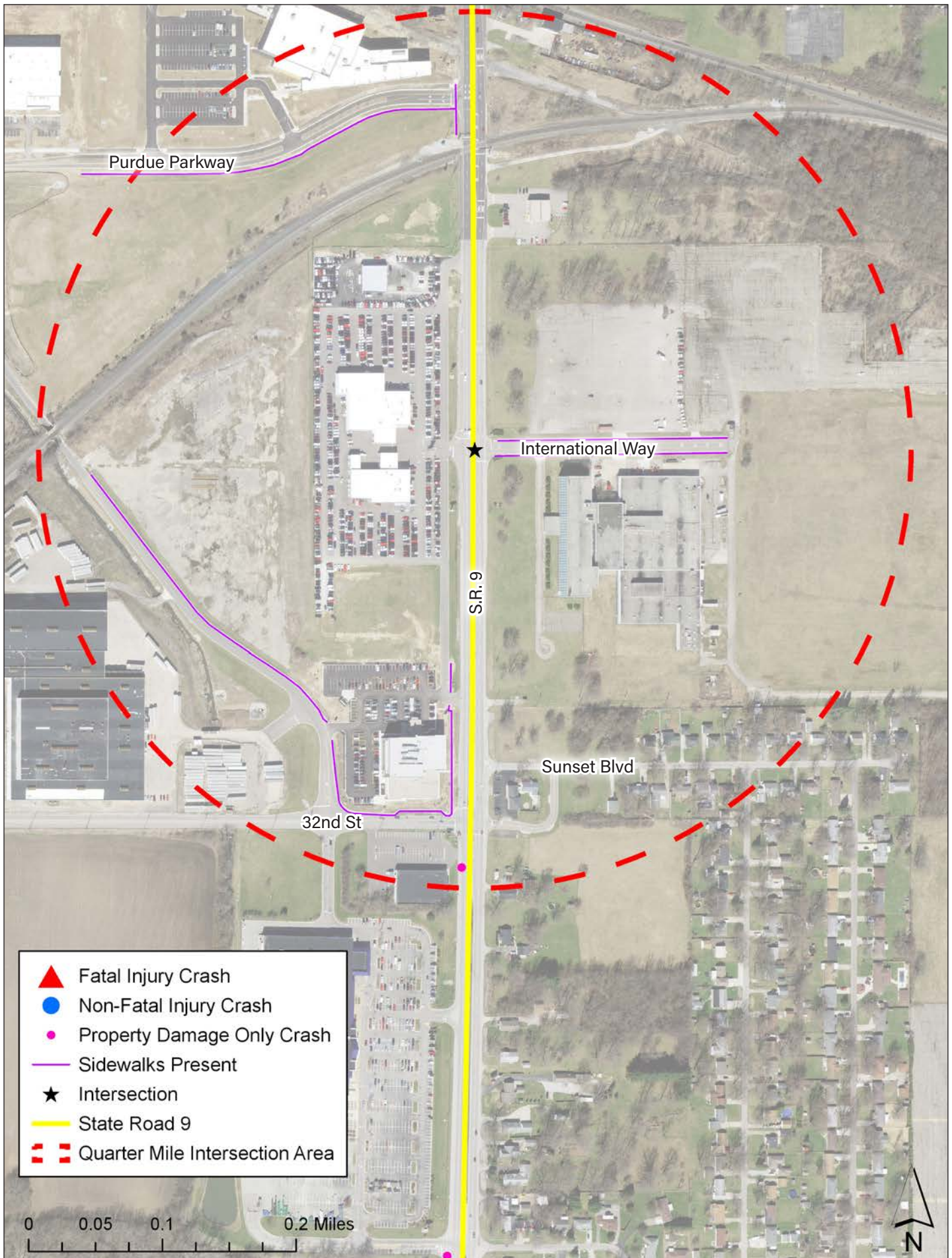


Zebra



Ladder





18 - 67th Street

Zero (0) non-motorized crashes occurred between 2008 and 2018. There were zero (0) pedestrians/pedalcyclists that crossed S.R. 9 at 67th Street on Wednesday March 27, 2019. On this day it was 34 degrees and clear. There is some sidewalk present to the northeast of the intersection. Speed data for this intersection was missing from the NPMRDS data set but a forecasted speed was used and calibrated.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		15,924
Vehicles per Hour (veh/hr)		664
Pedestrians Crossing S.R. 9		0
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	0	0
Property Damage Only	0	0
Total	0	0
Pedestrian Amenities		
Sidewalk Present (ft)		265
Sidewalk Proposed (ft)		2,584
Crosswalk Proposed (ft)		0
Crosswalk Proposed (ft)		316

Recommended Crosswalk Markings

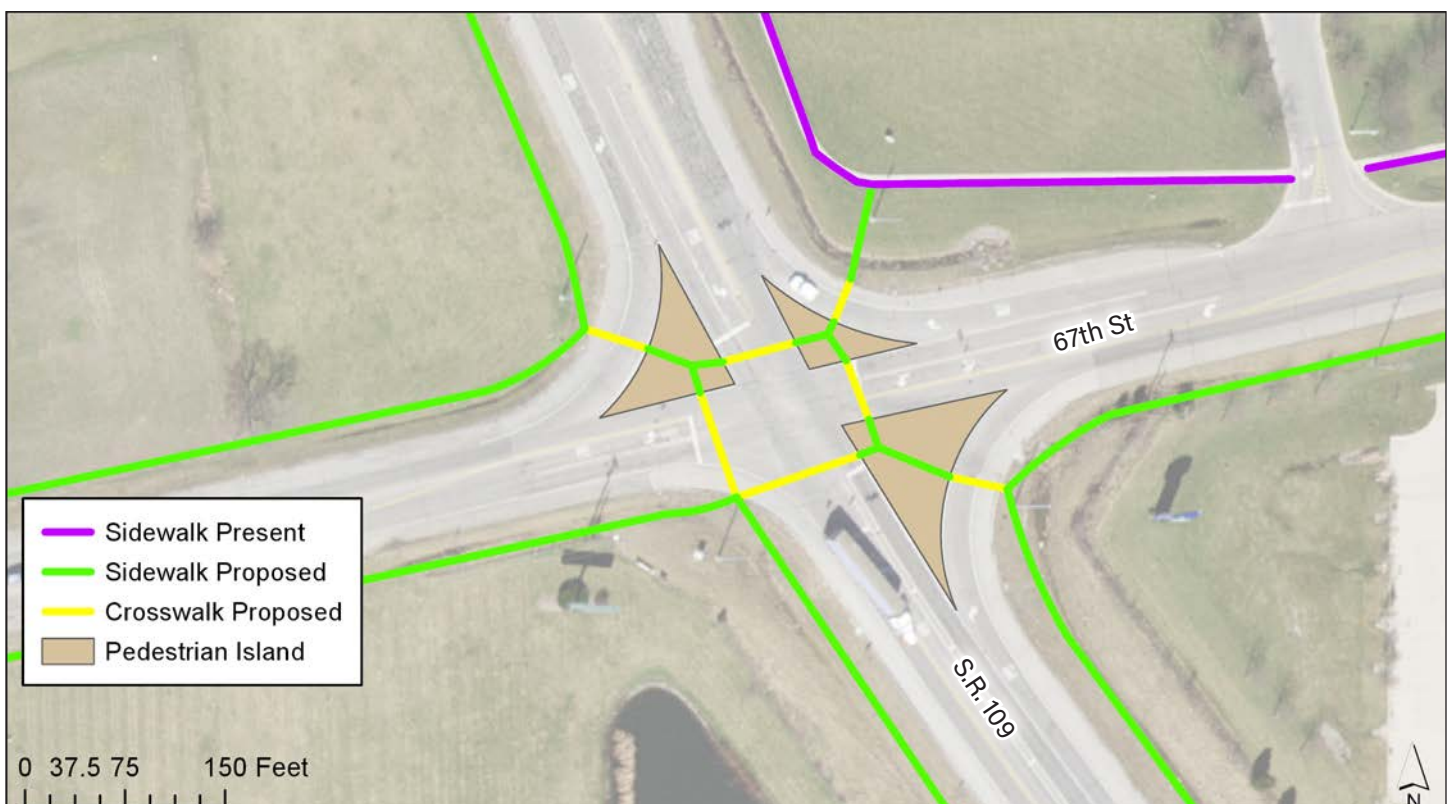
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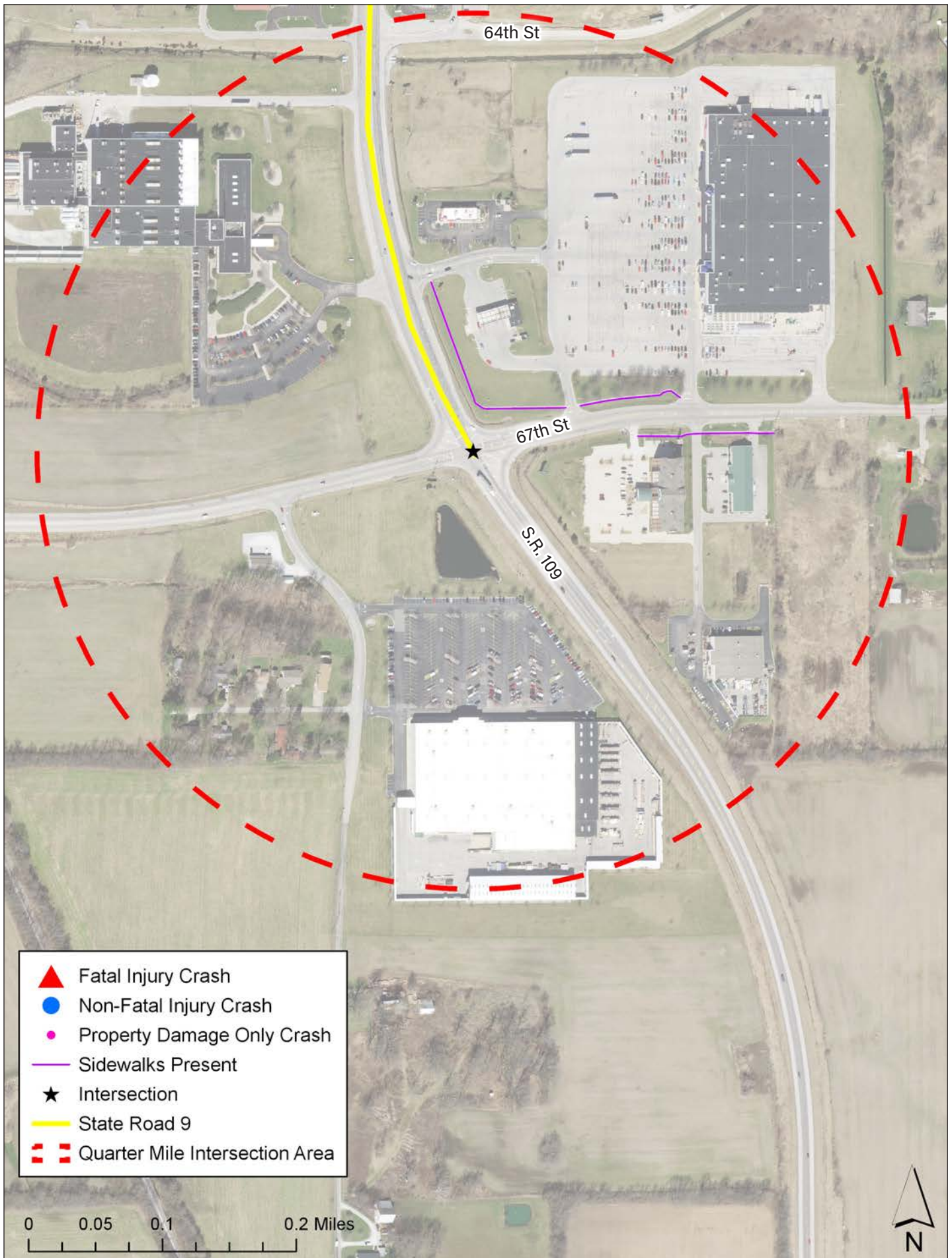


Zebra



Ladder





19 - Lindberg Road

Lindberg Road connects neighborhoods to the west of S.R. 9 to Eastside Elementary School to the east of S.R. 9. Zero (0) non-motorized crashes occurred between 2008 and 2018. There was one (1) pedestrian/pedalcyclist that crossed S.R. 9 at Lindberg Road on Tuesday March 5, 2019. On this day it was 9 degrees and clear. There is some sidewalk present to the northeast of the intersection.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		20,277
Vehicles per Hour (veh/hr)		845
Pedestrians Crossing S.R. 9		1
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	0	0
Property Damage Only	0	0
Total	0	0
Pedestrian Amenities		
Sidewalk Present (ft)		946
Sidewalk Proposed (ft)		1,545
Crosswalk Proposed (ft)		0
Crosswalk Proposed (ft)		352

Recommended Crosswalk Markings

Continental

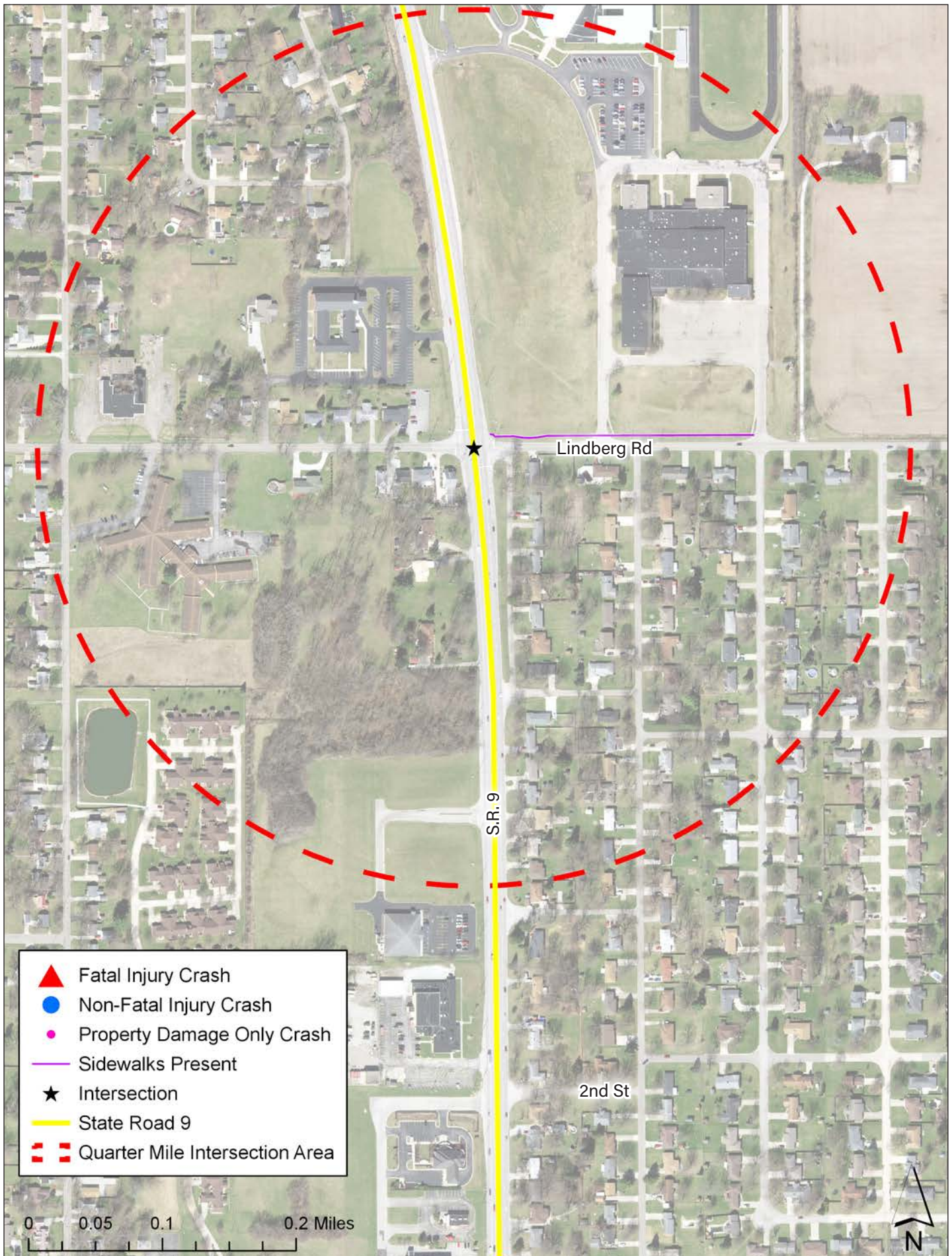


Zebra



Ladder





20 - Broadway Street

Zero (0) non-motorized crashes occurred between 2008 and 2018. There were zero (0) pedestrians/pedalcyclists that crossed S.R. 9 at Broadway Street on Tuesday March 5, 2019. On this day it was 10 degrees and clear.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume		15,687
Vehicles per Hour (veh/hr)		654
Pedestrians Crossing S.R. 9		0
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	0	0
Property Damage Only	0	0
Total	0	0
Pedestrian Amenities		
Sidewalk Present (ft)		0
Sidewalk Proposed (ft)		1,651
Crosswalk Present (ft)		0
Crosswalk Proposed (ft)		313

Recommended Crosswalk Markings

Continental

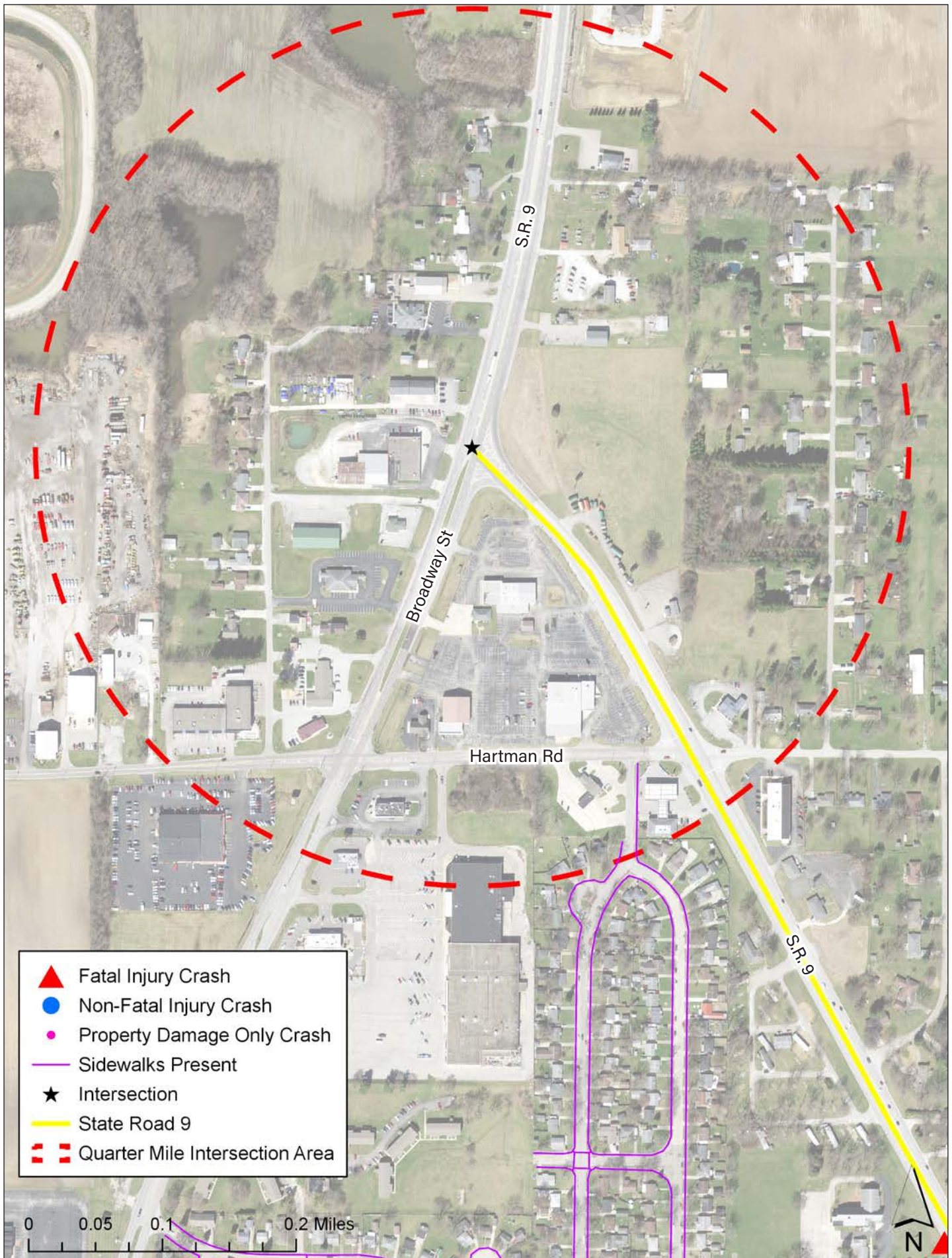


Zebra



Ladder





21 - Hartman Road

Zero (0) non-motorized crashes occurred between 2008 and 2018. There were zero (0) pedestrians/pedalcyclists that crossed S.R. 9 at Hartman Road on Tuesday March 5, 2019. On this day it was 10 degrees and clear.

Intersection Statistics		
Traffic Volumes (March 2019)		
Total Daily Entering Volume	10,581	
Vehicles per Hour (veh/hr)	441	
Pedestrians Crossing S.R. 9	0	
Non-Motorized Crashes (2008-2018)	Intersection	1/4-Mile Area
Fatal Injury	0	0
Non-Fatal Injury	0	0
Property Damage Only	0	0
Total	0	0
Pedestrian Amenities		
Sidewalk Present (ft)	0	
Sidewalk Proposed (ft)	1,567	
Crosswalk Present (ft)	0	
Crosswalk Proposed (ft)	387	

Recommended Crosswalk Markings

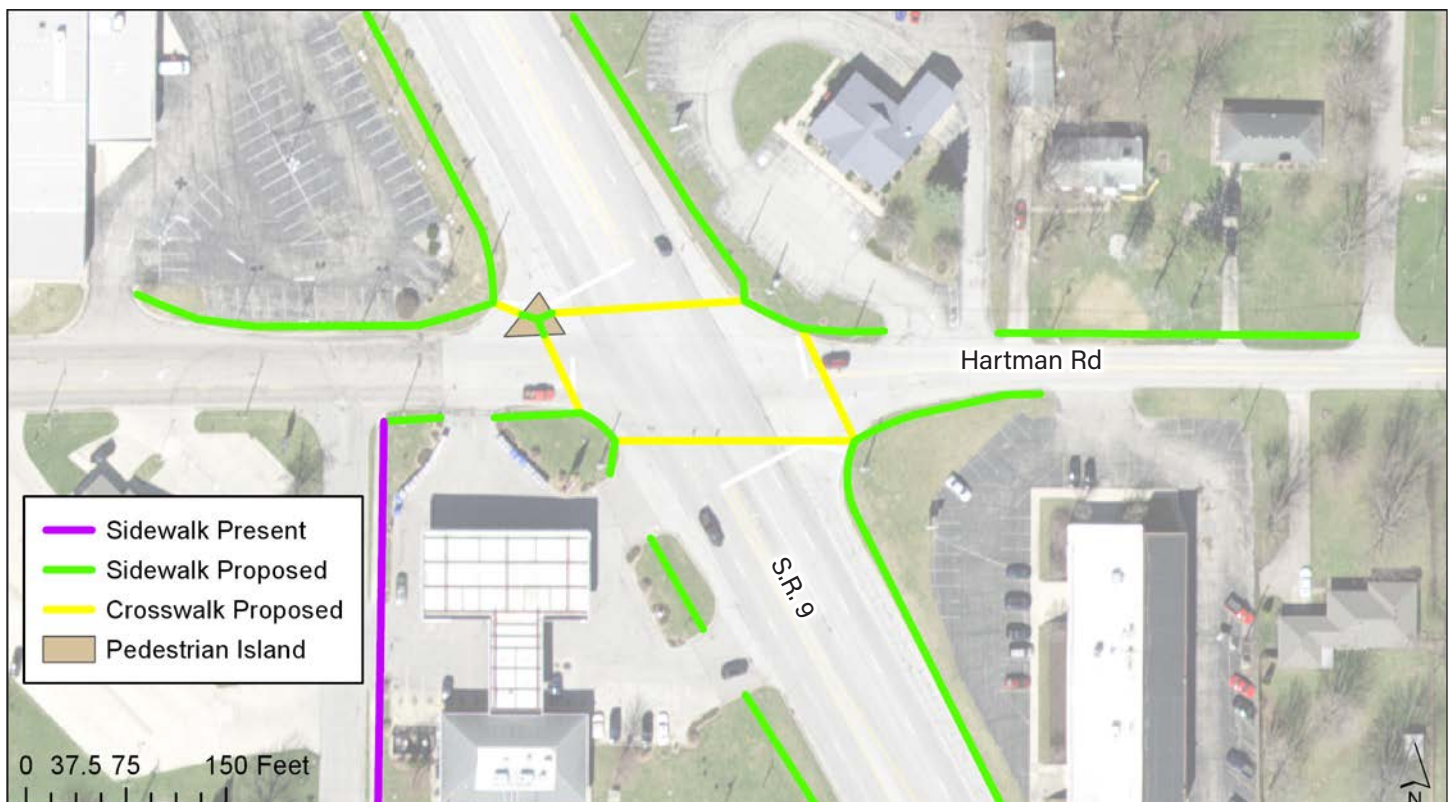
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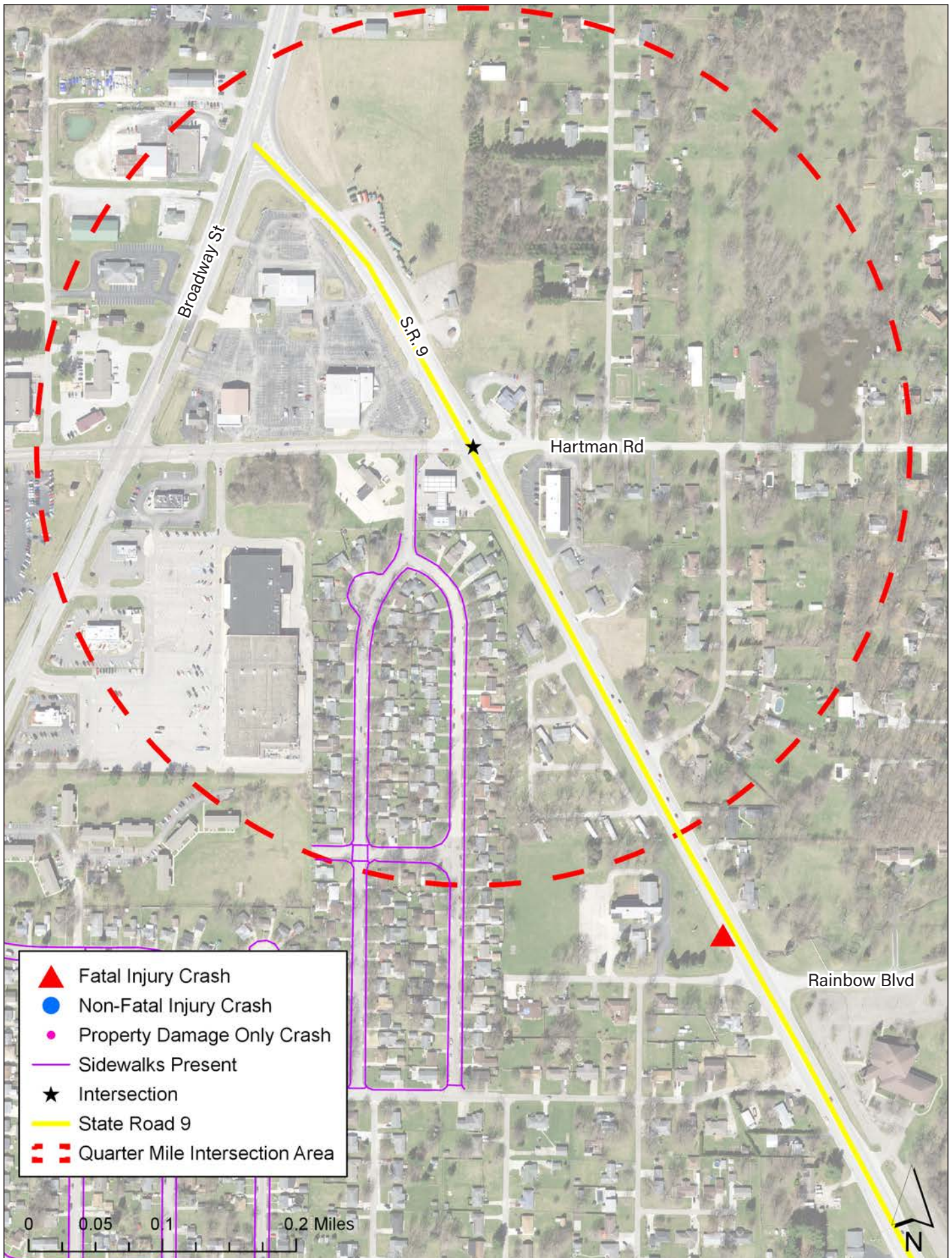


Zebra



Ladder





Appendix A: Corridor Speeds

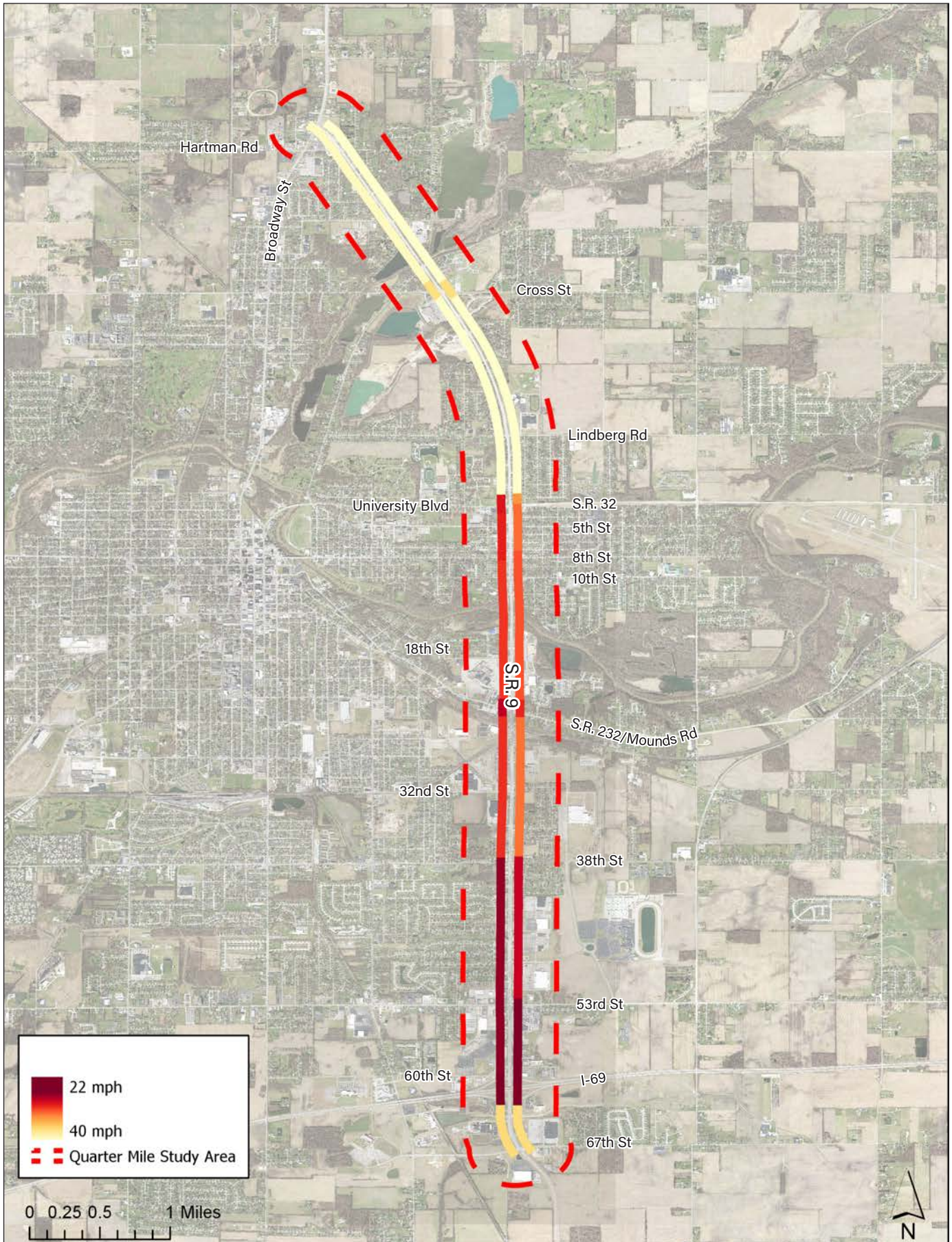
Speeds were determined using the National Performance Management Research Data Set (NPMRDS) procured through the Federal Highway Administration (FHWA). The NPMRDS is an archived speed and travel time data set collected through GPS-devices that covers the National Highway System (NHS). Data is categorized by passenger vehicles and trucks, is available for as small as 5-minute intervals, spans from 2011 to 2019, and is updated on a monthly basis. Finally, the NPMRDS includes unique roadway segments called Traffic Message Channels (TMCs) that may include multiple intersections. Data is compiled across these segments.

For State Road 9 / Scatterfield Road, data from February 2017 through December 2018 was combined to calculate speeds for multiple time periods throughout the day, as well as a daily average, for both northbound and southbound directions. Observations were compiled into 24, hourly bins that could be averaged for the specific time periods as defined below:

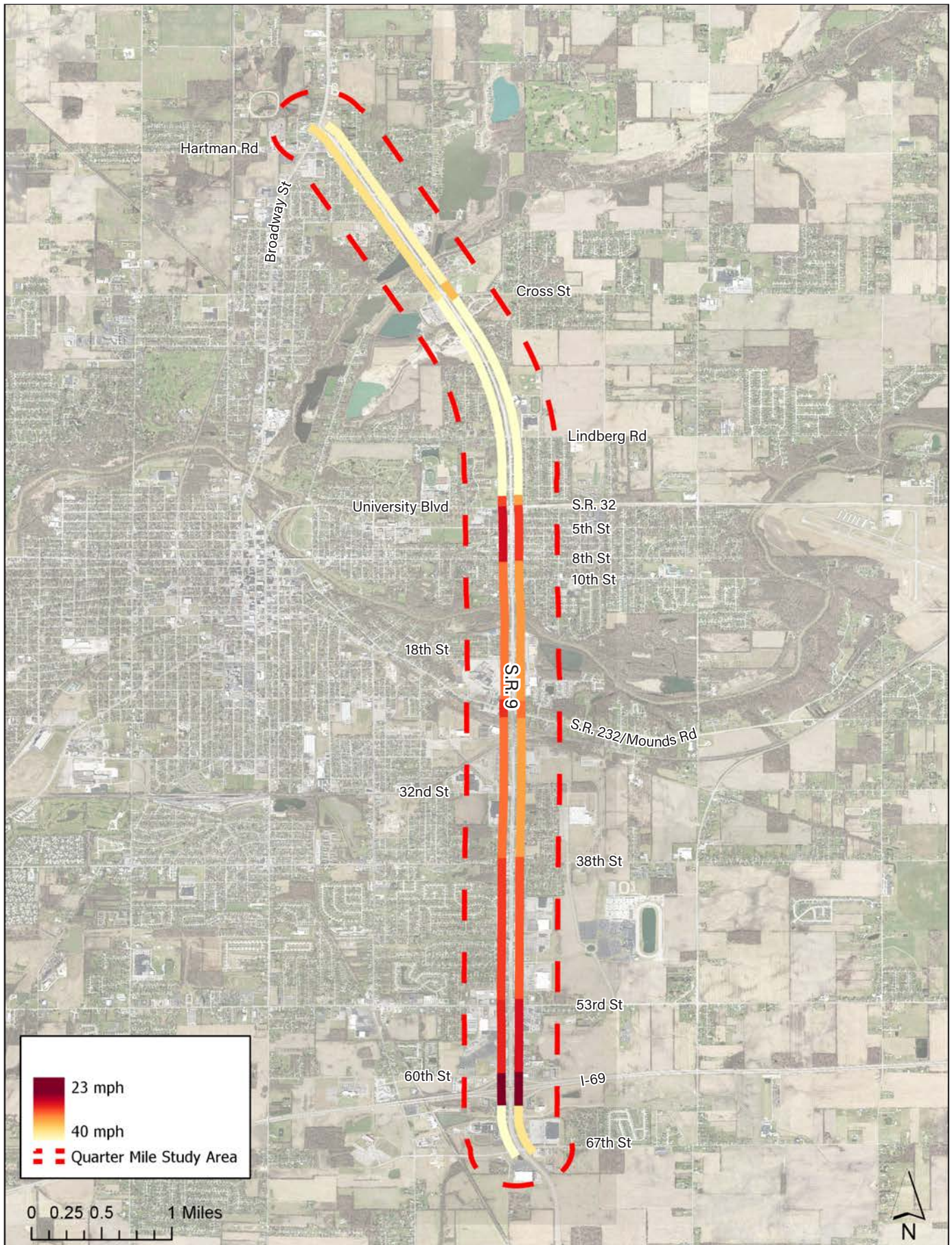
1. AM – 6 AM to 9 AM
2. Mid-Day – 9 AM to 3 PM
3. PM – 3 PM to 6 PM
4. Evening – 6 PM to 9 PM
5. Night – 9 PM to 6 AM

Typical speed studies are set up for a short period of time that does not reflect seasonal or daily effects and depends only on 100 or more observations. These speed studies can end up with relatively small sample sizes especially when compared to the NPMRDS. There were over 806,000 observations across the corridor between February 2017 through December 2018.

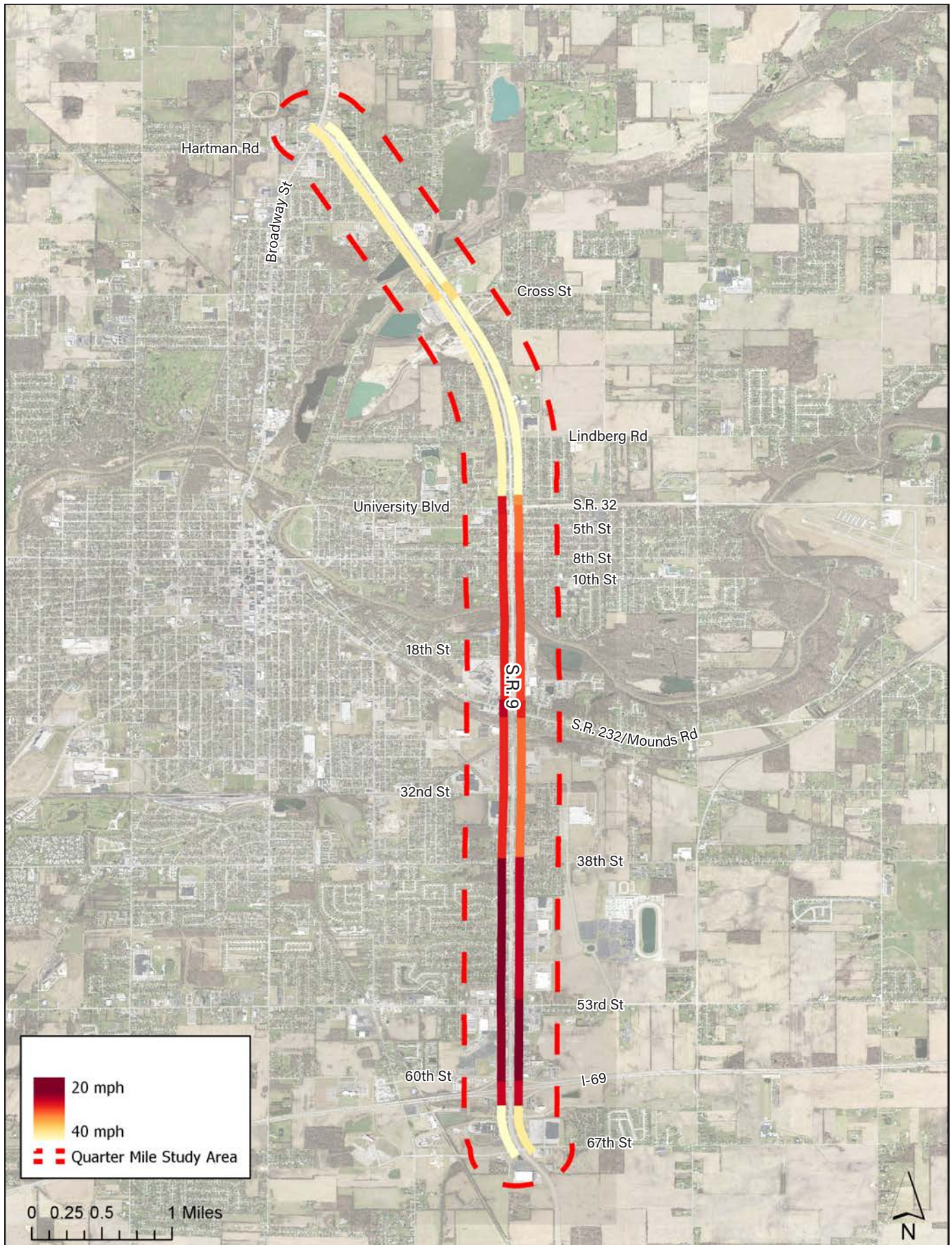
Daily Average Speed



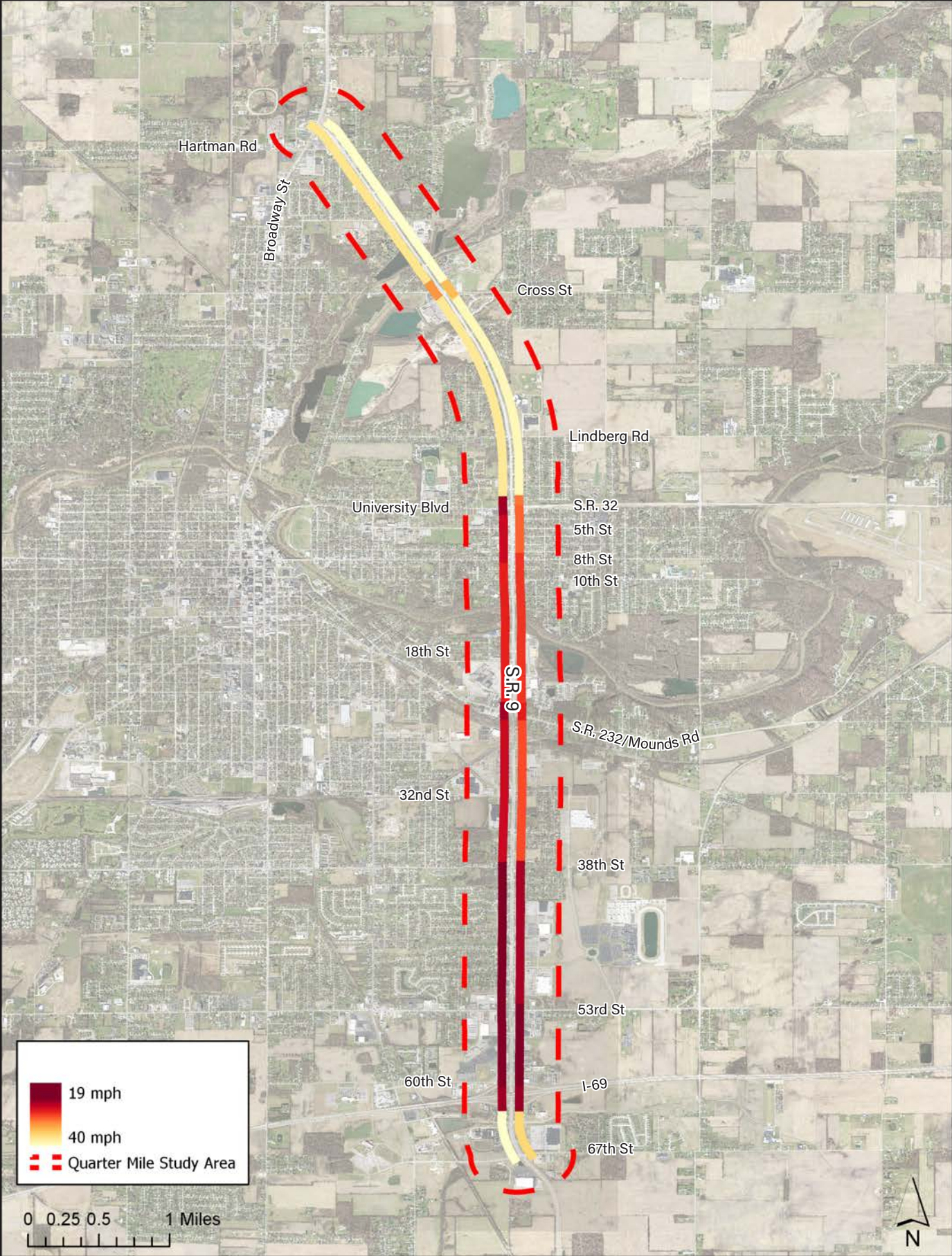
AM Peak Speed



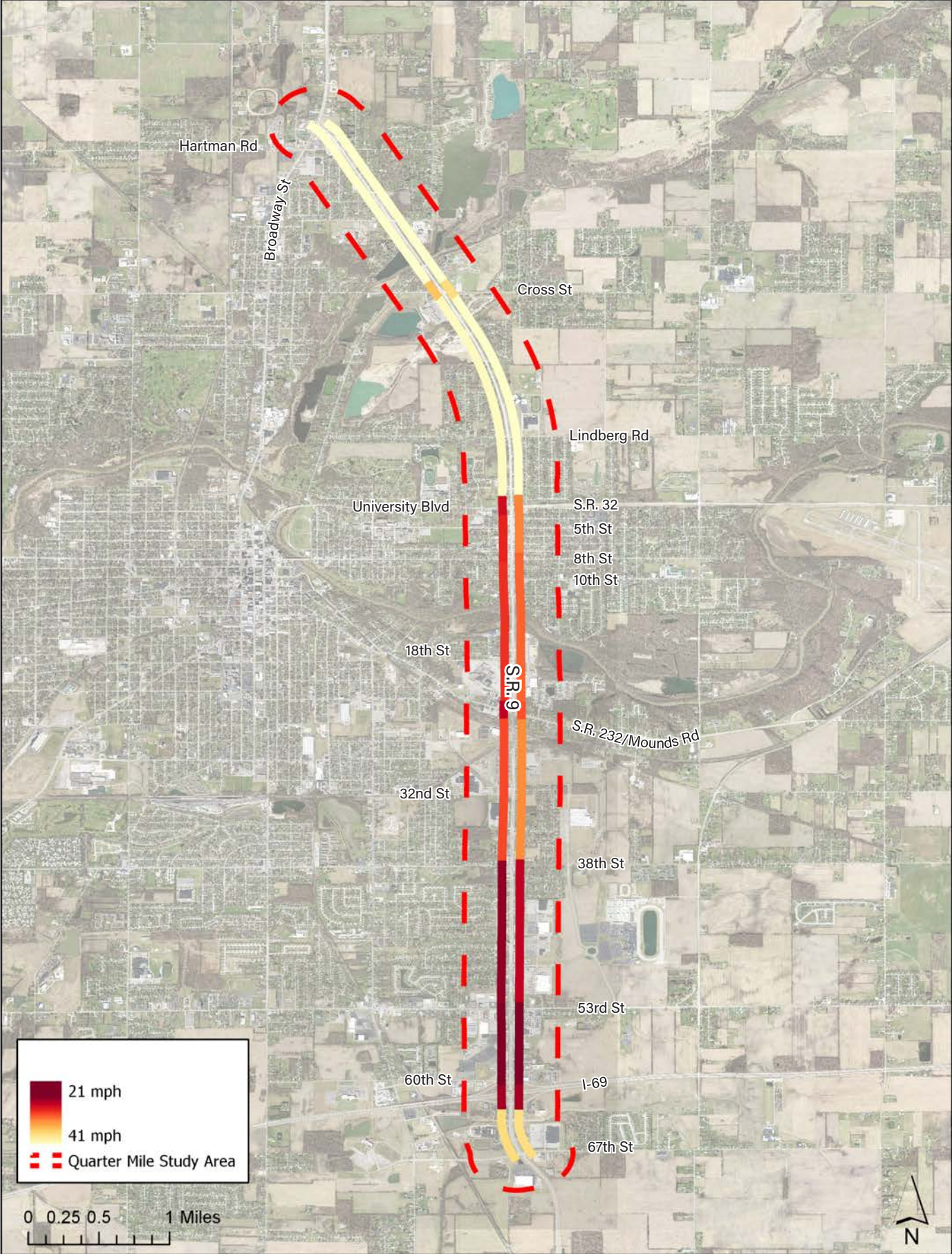
Midday Peak Speed



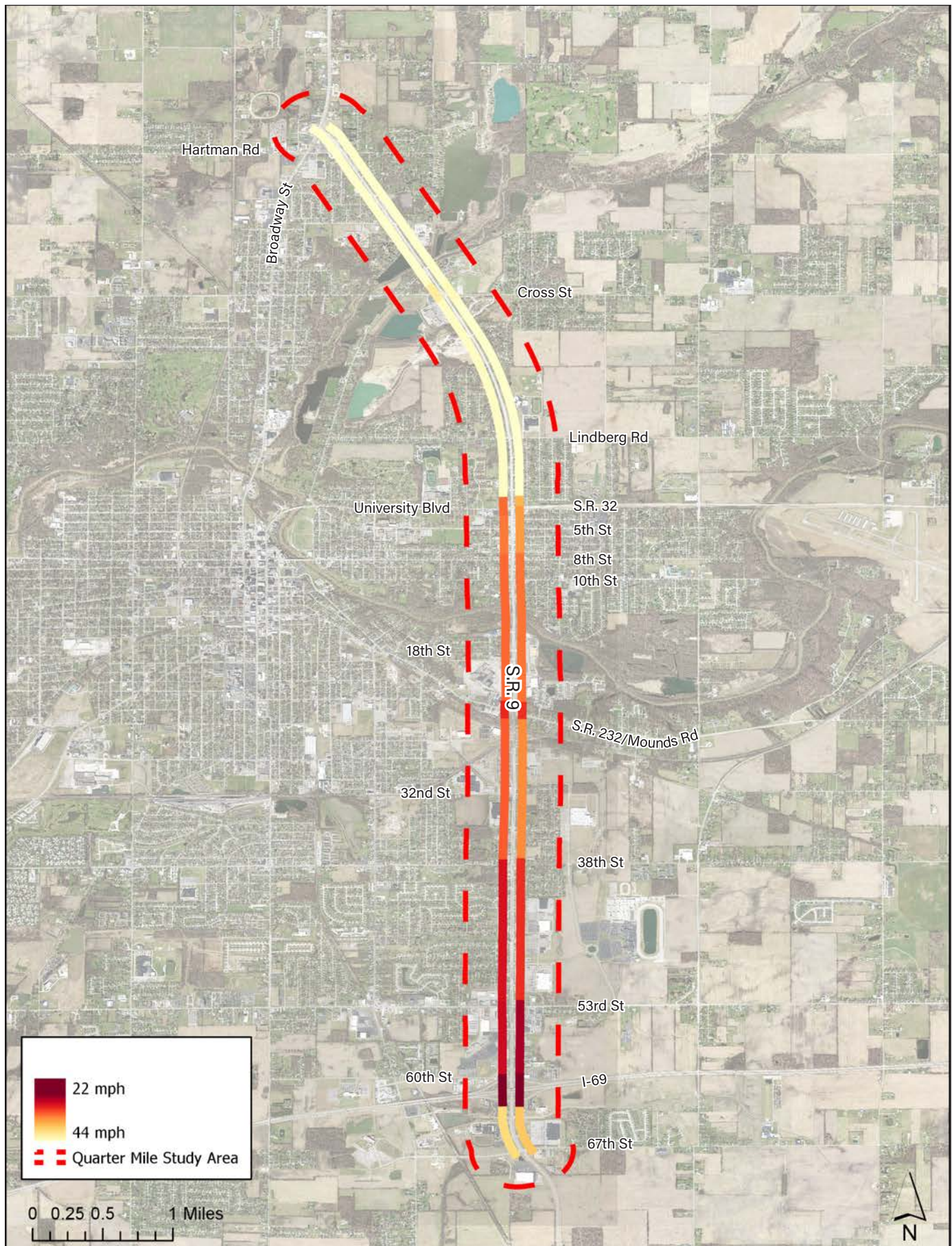
PM Peak Speed



Evening Peak Speed



Off Peak Speed



Appendix B: Intersection Speeds

Broadway Street	
Northbound Speeds (mph)	
Daily Average Speed	42
AM Peak Speed	39
Midday Peak Speed	41
PM Peak Speed	41
Evening Peak Speed	42
Off Peak Speed	44
Southbound Speeds (mph)	
Daily Average Speed	40
AM Peak Speed	37
Midday Peak Speed	38
PM Peak Speed	38
Evening Speed	41
Off Peak Speed	45

Hartman Road	
Northbound Speeds (mph)	
Daily Average Speed	42
AM Peak Speed	39
Midday Peak Speed	41
PM Peak Speed	41
Evening Peak Speed	42
Off Peak Speed	44
Southbound Speeds (mph)	
Daily Average Speed	40
AM Peak Speed	37
Midday Peak Speed	38
PM Peak Speed	38
Evening Speed	41
Off Peak Speed	45

Cross Street	
Northbound Speeds (mph)	
Daily Average Speed	37
AM Peak Speed	34
Midday Peak Speed	36
PM Peak Speed	33
Evening Peak Speed	37
Off Peak Speed	43
Southbound Speeds (mph)	
Daily Average Speed	37
AM Peak Speed	38
Midday Peak Speed	36
PM Peak Speed	32
Evening Speed	35
Off Peak Speed	42

Lindberg Road	
Northbound Speeds (mph)	
Daily Average Speed	42
AM Peak Speed	40
Midday Peak Speed	40
PM Peak Speed	40
Evening Peak Speed	42
Off Peak Speed	44
Southbound Speeds (mph)	
Daily Average Speed	41
AM Peak Speed	40
Midday Peak Speed	39
PM Peak Speed	38
Evening Speed	41
Off Peak Speed	44

S.R. 32/ University Blvd	
Northbound Speeds (mph)	
Daily Average Speed	32
AM Peak Speed	32
Midday Peak Speed	30
PM Peak Speed	28
Evening Peak Speed	30
Off Peak Speed	36
Southbound Speeds (mph)	
Daily Average Speed	28
AM Peak Speed	30
Midday Peak Speed	26
PM Peak Speed	22
Evening Speed	26
Off Peak Speed	33

8th Street	
Northbound Speeds (mph)	
Daily Average Speed	29
AM Peak Speed	31
Midday Peak Speed	27
PM Peak Speed	25
Evening Peak Speed	29
Off Peak Speed	31
Southbound Speeds (mph)	
Daily Average Speed	29
AM Peak Speed	31
Midday Peak Speed	27
PM Peak Speed	26
Evening Speed	28
Off Peak Speed	33

10th Street	
Northbound Speeds (mph)	
Daily Average Speed	29
AM Peak Speed	31
Midday Peak Speed	27
PM Peak Speed	25
Evening Peak Speed	29
Off Peak Speed	31
Southbound Speeds (mph)	
Daily Average Speed	29
AM Peak Speed	31
Midday Peak Speed	27
PM Peak Speed	26
Evening Speed	28
Off Peak Speed	33

18th Street	
Northbound Speeds (mph)	
Daily Average Speed	29
AM Peak Speed	31
Midday Peak Speed	27
PM Peak Speed	25
Evening Peak Speed	29
Off Peak Speed	31
Southbound Speeds (mph)	
Daily Average Speed	29
AM Peak Speed	31
Midday Peak Speed	27
PM Peak Speed	26
Evening Speed	28
Off Peak Speed	33

Mounds Mall Plaza	
Northbound Speeds (mph)	
Daily Average Speed	29
AM Peak Speed	31
Midday Peak Speed	27
PM Peak Speed	25
Evening Peak Speed	29
Off Peak Speed	31
Southbound Speeds (mph)	
Daily Average Speed	29
AM Peak Speed	31
Midday Peak Speed	27
PM Peak Speed	26
Evening Speed	28
Off Peak Speed	33

S.R. 232/ Mounds Rd	
Northbound Speeds (mph)	
Daily Average Speed	27
AM Peak Speed	30
Midday Peak Speed	25
PM Peak Speed	24
Evening Peak Speed	28
Off Peak Speed	28
Southbound Speeds (mph)	
Daily Average Speed	26
AM Peak Speed	29
Midday Peak Speed	24
PM Peak Speed	22
Evening Speed	25
Off Peak Speed	30

International Way	
Northbound Speeds (mph)	
Daily Average Speed	30
AM Peak Speed	32
Midday Peak Speed	29
PM Peak Speed	26
Evening Peak Speed	30
Off Peak Speed	32
Southbound Speeds (mph)	
Daily Average Speed	29
AM Peak Speed	31
Midday Peak Speed	27
PM Peak Speed	24
Evening Speed	29
Off Peak Speed	32

32nd Street	
Northbound Speeds (mph)	
Daily Average Speed	30
AM Peak Speed	32
Midday Peak Speed	29
PM Peak Speed	26
Evening Peak Speed	30
Off Peak Speed	32
Southbound Speeds (mph)	
Daily Average Speed	29
AM Peak Speed	31
Midday Peak Speed	27
PM Peak Speed	24
Evening Speed	29
Off Peak Speed	32

38th Street	
Northbound Speeds (mph)	
Daily Average Speed	24
AM Peak Speed	28
Midday Peak Speed	22
PM Peak Speed	20
Evening Peak Speed	22
Off Peak Speed	28
Southbound Speeds (mph)	
Daily Average Speed	25
AM Peak Speed	29
Midday Peak Speed	22
PM Peak Speed	21
Evening Speed	23
Off Peak Speed	28

43rd Street	
Northbound Speeds (mph)	
Daily Average Speed	24
AM Peak Speed	28
Midday Peak Speed	22
PM Peak Speed	20
Evening Peak Speed	22
Off Peak Speed	28
Southbound Speeds (mph)	
Daily Average Speed	25
AM Peak Speed	29
Midday Peak Speed	22
PM Peak Speed	21
Evening Speed	23
Off Peak Speed	28

Charles Street	
Northbound Speeds (mph)	
Daily Average Speed	24
AM Peak Speed	28
Midday Peak Speed	22
PM Peak Speed	20
Evening Peak Speed	22
Off Peak Speed	28
Southbound Speeds (mph)	
Daily Average Speed	25
AM Peak Speed	29
Midday Peak Speed	22
PM Peak Speed	21
Evening Speed	23
Off Peak Speed	28

53rd Street	
Northbound Speeds (mph)	
Daily Average Speed	21
AM Peak Speed	25
Midday Peak Speed	19
PM Peak Speed	18
Evening Peak Speed	19
Off Peak Speed	23
Southbound Speeds (mph)	
Daily Average Speed	25
AM Peak Speed	28
Midday Peak Speed	23
PM Peak Speed	21
Evening Speed	23
Off Peak Speed	28

56th Street	
Northbound Speeds (mph)	
Daily Average Speed	21
AM Peak Speed	25
Midday Peak Speed	19
PM Peak Speed	18
Evening Peak Speed	19
Off Peak Speed	23
Southbound Speeds (mph)	
Daily Average Speed	25
AM Peak Speed	28
Midday Peak Speed	23
PM Peak Speed	21
Evening Speed	23
Off Peak Speed	28

59th Street	
Northbound Speeds (mph)	
Daily Average Speed	21
AM Peak Speed	25
Midday Peak Speed	19
PM Peak Speed	18
Evening Peak Speed	19
Off Peak Speed	23
Southbound Speeds (mph)	
Daily Average Speed	25
AM Peak Speed	28
Midday Peak Speed	23
PM Peak Speed	21
Evening Speed	23
Off Peak Speed	28

I-69 Southbound Ramps	
Northbound Speeds (mph)	
Daily Average Speed	21
AM Peak Speed	21
Midday Peak Speed	23
PM Peak Speed	19
Evening Peak Speed	21
Off Peak Speed	21
Southbound Speeds (mph)	
Daily Average Speed	24
AM Peak Speed	24
Midday Peak Speed	25
PM Peak Speed	22
Evening Speed	24
Off Peak Speed	24

I-69 Northbound Ramps	
Northbound Speeds (mph)	
Daily Average Speed	21
AM Peak Speed	21
Midday Peak Speed	23
PM Peak Speed	19
Evening Peak Speed	21
Off Peak Speed	21
Southbound Speeds (mph)	
Daily Average Speed	24
AM Peak Speed	24
Midday Peak Speed	25
PM Peak Speed	22
Evening Speed	24
Off Peak Speed	24

67th Street	
Northbound Speeds (mph)	
Daily Average Speed	37
AM Peak Speed	37
Midday Peak Speed	38
PM Peak Speed	35
Evening Peak Speed	37
Off Peak Speed	37
Southbound Speeds (mph)	
Daily Average Speed	37
AM Peak Speed	40
Midday Peak Speed	40
PM Peak Speed	41
Evening Speed	37
Off Peak Speed	40

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